

THE HIMALAYAN JOURNAL

RECORDS OF THE HIMALAYAN CLUB

EDITED BY
KENNETH MASON

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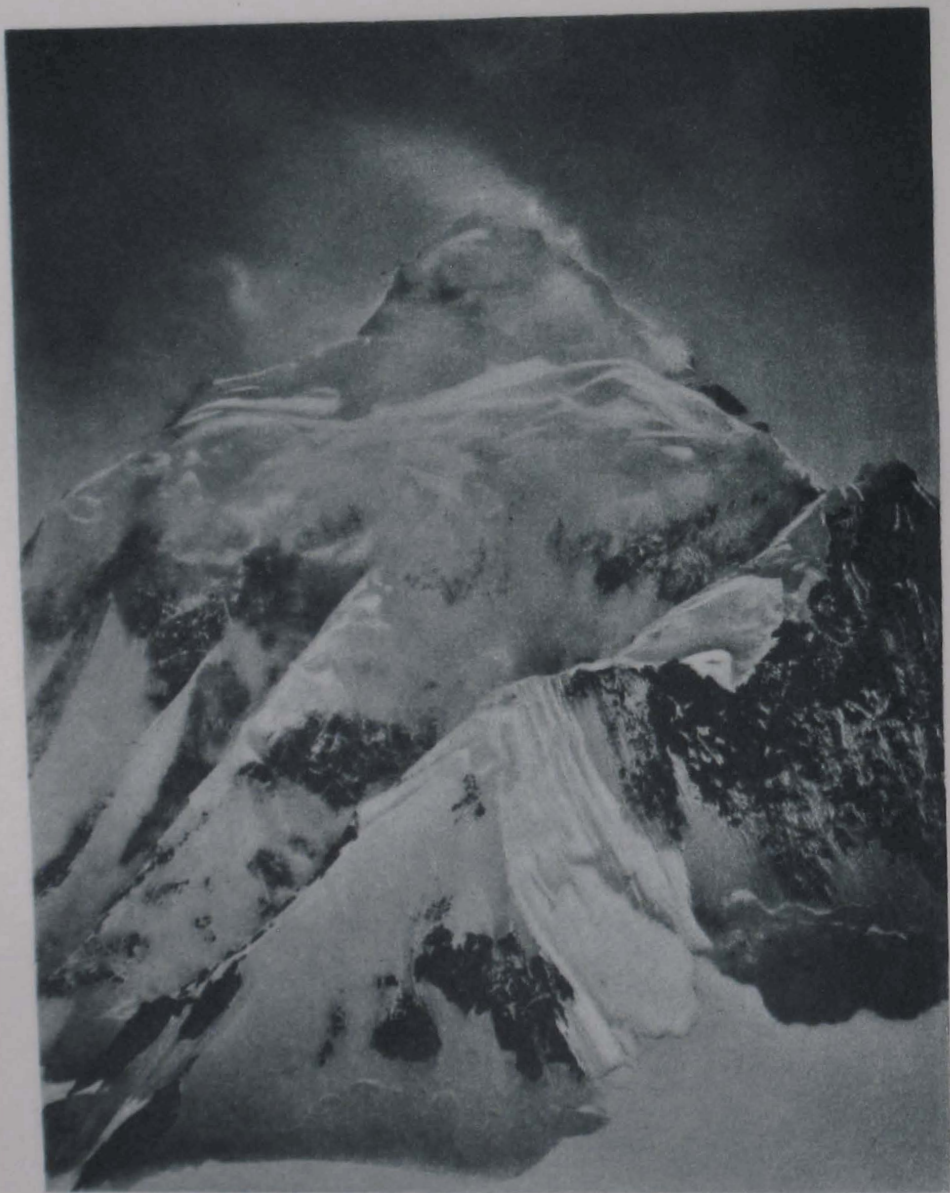
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THE HIMALAYAN JOURNAL.

APRIL, 1929.

(No. 1)

THE FOUNDING OF THE HIMALAYAN CLUB.

MR. DOUGLAS FRESHFIELD tells me that the idea of a Himalayan Club goes back so far as 1866, when it was formally suggested to the Asiatic Society of Bengal by Mr. F. Drew and Mr. W. H. Johnson. And Mr. Freshfield himself, writing in *The Alpine Journal* in 1884, advised that our knowledge of the Himalaya might thus be extended. "The formation at Calcutta or Simla," he said, "of an Himalayan Club, prepared to publish 'Narratives of Science and Adventure' concerning the mountains, would be the most serviceable means to this end." The idea must have recurred to many, but it never took shape, not because a Club was not wanted, but because in this land of endlessness it is only now and then that the two or three are gathered together. The thing had hung in the balance for years when a chance talk at Simla tipped the beam, and the Himalayan Club was born on the path behind Jakko on the afternoon of the 6th October, 1927.

I wrote first to Major Kenneth Mason of the Survey of India, who also had long cherished the hope of a Club; to Major-General Walter Kirke, then acting as Chief of the General Staff; and to Brigadier E. A. Tandy, Surveyor General of India. I was diffident, for there seemed no reason why the time should now be fulfilled. Mason replied that he was with me heart and soul; Kirke that he would do anything he could to help; Tandy that he would help in any way he could. So encouraged, I went ahead. The Viceroy, Lord Irwin, the Commander-in-Chief, Field-Marshal Sir William Birdwood, and Sir Malcolm Hailey, then Governor of the Punjab, were among the first to whom I told our plans. Others were Mr. T. E. T. Upton,

Solicitor to the Government of India ; Sir Edwin Pascoe, Director of the Geological Survey of India ; Major-General Kenneth Wigram and Brigadier W. L. O. Twiss who still, they say, count for something among Gurkhas ; Mr. G. Mackworth Young, Army Secretary ; and Mr. J. G. Acheson, Deputy Foreign Secretary. Mason meanwhile had consulted Major E. O. Wheeler of the Survey of India, and Captain J. G. Bruce, 6th Gurkhas. These were the founders of the Himalayan Club, and it is to their confidence and sound judgment that the Club owes its constitution. There were three others who had no claim to be members of the Club, but whose interest and advice meant much to us : the Foreign Secretary, Sir Denys Bray ; the Education Secretary, Mr. J. W. Bhore, who included in his Department the Survey of India ; and the Private Secretary to the Viceroy, Mr. George Cunningham. It was Denny Bray who determined the quality of our founder members : "What you want," he said, "is a solid core of men who have done things."

We proceeded deliberately, remembering always that it's the first step that counts. There were three things to be decided : What should the Club be called ? What should be its objects ? Who should be asked to become founder members ? The name of the Club was soon settled. "The Alpine Club of India" had been suggested, but seemed likely to scare those whose interest was not high mountaineering ; nor had we need to look for a name beyond our own great range. Almost from the first we thought of ourselves as "The Himalayan Club." It was agreed that our objects should be based on the famous definition in the Rules of the Alpine Club. But it is shikar that first impels nine-tenths of those who go to the Himalaya ; and though we were unwilling to admit shikar as a specific object of the Club, we thought that our objects should recognise that knowledge of the Himalaya is extended through "sport," which would cover mountain climbing and ski-running as well as shikar. In this way we arrived at our definition :—

"To encourage and assist Himalayan travel and exploration, and to extend knowledge of the Himalaya and adjoining mountain ranges through science, art, literature and sport."

The list of those who should be asked to become founder members, was anxiously and carefully compiled. Our intention was to include everyone who had "done things" in the Himalaya ; and if anyone was inadvertently omitted, I hope he will forgive and join us now. On the 20th December, 1927, Mason and I sent out our circular letter, and then we waited apprehensively for the replies. We had never

dared to hope for such a response. From all over India and beyond, and from the back of beyond, from Europe, Africa and America, replies came welcoming the Club and making varied and valuable suggestions. Almost everyone replied, and almost everyone who replied became a founder member. Our 127 founder members contribute to the objects of the Club much that there is of Himalayan knowledge and experience. The Club was formally inaugurated at a meeting held in Field-Marshal Sir William Birdwood's room at Army Headquarters, Delhi, on the 17th February, 1928.

While we were still intent on our first step, we learnt that "The Mountain Club of India" had been formed at Calcutta on the 23rd September, 1927. Mason and I took an early opportunity to meet Mr. W. Allsup, its moving spirit, and it was agreed that the two Clubs should go forward with mutual good-will, and that the question of fusion should be considered later. At the inaugural meeting of the Himalayan Club it was decided to ask the Mountain Club whether it would be willing to amalgamate. A general meeting of the Mountain Club on the 14th December, 1928, agreed to amalgamate "for the benefit of the common aims of the two Clubs," and we are now one strong and united organisation. Allsup to our regret has now left India, but the combined Club will not forget how selflessly he advocated amalgamation.

We owe much too to the Alpine Club, and in particular to Colonel E. L. Strutt, the Editor of the *Alpine Journal*, who is also one of our founder members, and to Mr. Sydney Spencer, the Honorary Secretary. From the first and throughout I have been in close correspondence with them, and their ungrudging help and wise advice have never failed me. Members of the Alpine Club who come to the Himalaya may be sure of a warm welcome and all the assistance that the Himalayan Club can give.

And so the Himalayan Club is founded, and we hope great things of it: the geographer that the blank places on his map may be filled in; the scientist that our knowledge of the Himalaya, its rocks and glaciers, its animals and plants, its peoples and their way of living, may continually expand; the artist that its glories may inspire fine pictures. The mountaineer may dream of the first ascent of a thousand unclimbed peaks, the shikari of record heads shot in nallas yet unknown. My own hope is that it may help to rear a breed of men in India, hard and self-reliant, who will know how to enjoy life on the high hills.

G. L. CORBETT.

THE SHYOK DAM IN 1928.

F. LUDLOW.

DURING the summer of 1928 the Shyok glaciers suddenly leapt into prominence in the Home and Indian press. Alarming accounts appeared in various papers describing exactly what would happen when the dam which had formed across the Shyok valley collapsed, and the pent-up waters were let loose.

But the dam held despite prophecies to the contrary. As far as we know, the lake still exists, and now that winter holds the region in its icy grip, the public has lost interest.

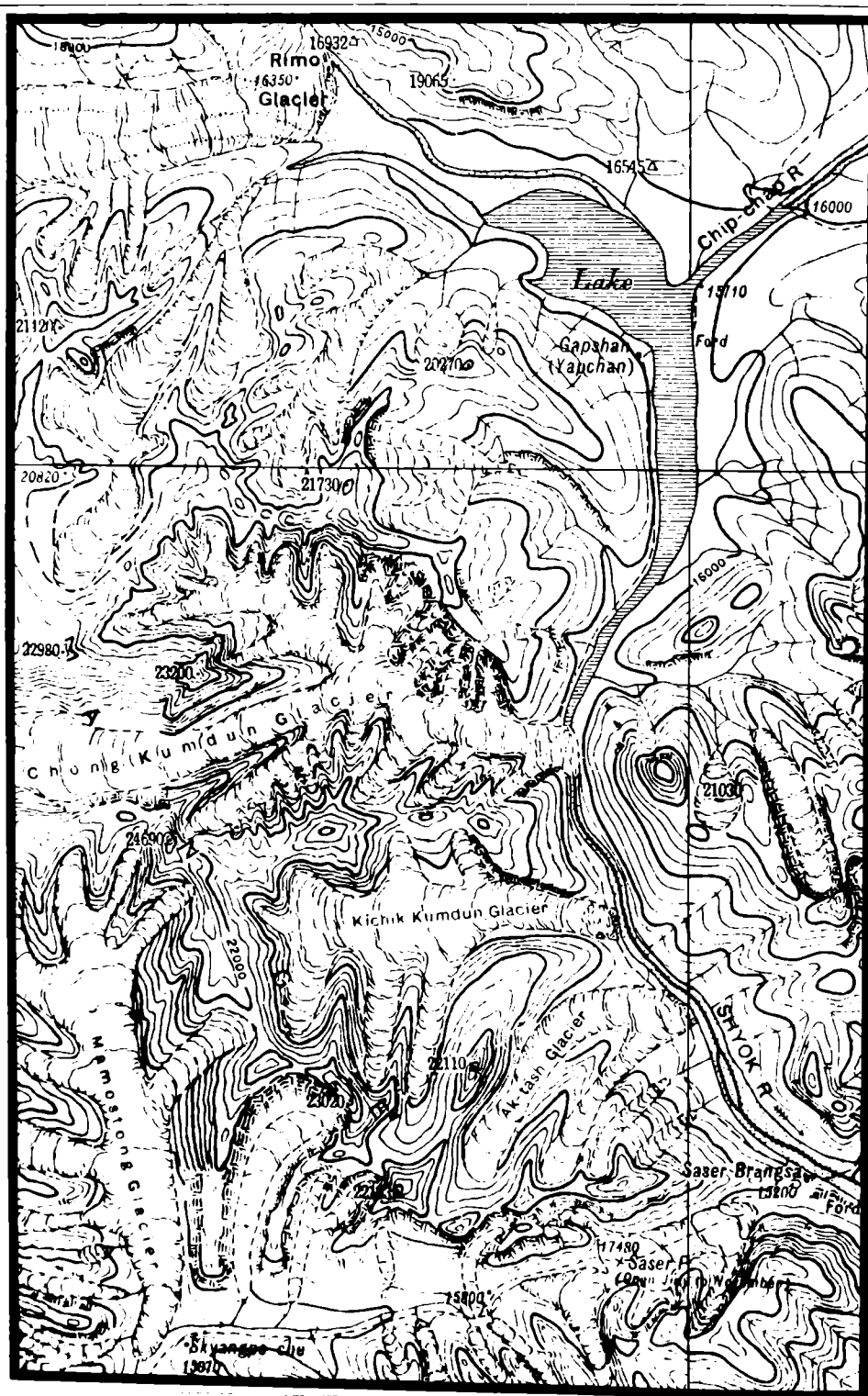
With the approach of summer, however, the dam may again loom large in newspaper head-lines. It seems an opportune moment, therefore, to describe in plain language the situation in the upper Shyok as I saw it in August, 1928.

The newspaper reports referred to above reached me in July at Panamik in the Nubra valley, where I was busily engaged in natural history pursuits. I had already arranged to visit the Karakoram pass. Being so near, I decided to go to the upper Shyok and see for myself what all the 'pothor' was about.

Before proceeding to details let us first glance at the country we are to visit. Some 30 miles due west of the Karakoram pass, at an altitude of about 20,000 feet, is the head basin of an enormous glacier—the Rimo. We knew little about this glacier until it was surveyed by the De Filippi expedition in 1914, when it was accurately mapped. It consists of three main branches, the Northern, Central, and Southern Rimo. The Northern Rimo throws a tongue of ice over the Central Asian watershed, forming the source of the Yarkand river which flows northwards into Chinese Turkistan, and after traversing the Taklamakan desert, ultimately loses itself in the marshes of Lop Nor.

The Central and Southern Rimo branches, draining the north-eastern slopes of the Karakoram range, unite about ten miles south of the watershed and form the main source of the Shyok river, which flows south-east and then south through a broad plain for a distance of some nine miles. The valley then rapidly contracts and the river enters a narrow gorge.

On the eastern side of the gorge, red limestone cliffs fall almost vertically to the river from the Dapsang massif. On the west the slopes, though less precipitous than on the east, nevertheless descend steeply from the main Karakoram range. Here, almost overlooking the gorge, are half a dozen magnificent peaks, every one of which is



THE UPPER SHYOK GLACIERS

Miles 5 4 3 2 1 0 5 Miles

over 22,000 feet, and one, K³¹, 24,690 feet. From these descend three glaciers which in order from north to south are called the Chong Kumdan, the Kichik Kumdan and the Aktash. South of the Aktash glacier, are two others, smaller and of no importance.

In the event of a heavy accumulation of snow on the east of the main range, these three glaciers owing to their steep beds, advance suddenly and rapidly—rapidly, that is, for glaciers,—into the Shyok gorge. On occasions they flow right across the river until they strike the precipitous cliffs on the left bank. Sometimes the force of the waters above maintains a channel past the snouts by erosion, and ice-floes are torn from the glacier. Sometimes the river maintains channels under the ice. At other times the glaciers not only extend across the whole width of the Shyok, but they turn down the river-bed for hundreds of yards, completely obstructing its flow. The waters of the Rimo are then held up, and a lake is formed on the broad plain referred to above. The size of the lake will of course depend on the height and strength of the obstructing dam.

But the lake cannot increase for ever. Sooner or later the accumulated waters must overcome the obstruction and find an outlet along their natural course. In the past this appears to have been effected in one of two ways. Either the dam suddenly collapses and the waters thunder down in one appalling cataract, or the waters eat a tunnel through the dam and disperse in a more gradual and less terrifying manner.

In a subsequent article in this Journal, Major Mason has given a brief history of these glaciers during the past 150 years, and discussed the effects of their floods.

Leaving Panamik in the Nubra valley on the 24th July, I travelled by the ordinary summer route used when the glaciers are in the valley, via the Saser La and Depsang plateau to Daulat-Beg-öldi, which I reached on the 30th July. The next day I descended the Chip-chap river and encamped on the eastern shore of the Gapshan lake slightly to the north of the Chip-chap confluence.

The lake was shaped like an irregular crescent with its two horns pointing north-west and south. At the widest part, probably opposite my tent, it was about $1\frac{1}{2}$ to 2 miles broad. Southwards towards the gorge it narrowed rapidly to a breadth of only a few hundred yards. Towards the Rimo glacier it contracted more gradually, and seemed to be still at least half a mile wide at the point where the streams from the Rimo emptied into it. The lake was approximately 10 miles long, and by a rough calculation based on a fall of 30 feet per mile

in the Shyok river, I estimated its average depth to be about 150 feet. Along the eastern shore I noticed small terraces indicating the height of former lakes. One such terrace must have been 100 feet above the surface at the time of my visit.

During the two days I spent on its shores, the lake rose rapidly, and on August 2nd, I calculated that in 24 hours it had risen $1\frac{1}{2}$ feet. These days, however, were particularly warm and sunny and the several glaciers feeding the lake must have been melting at very nearly their maximum rate. I can quite imagine that on a cold and cloudy day, the rise observed on August 2nd, might have been halved or even quartered.

The combined snout of the Central and Southern Rimo is about seven miles from the Chip-chap confluence although it appears to be considerably nearer. The route to it presents no real difficulties, and lies along the northern shore of the lake for four miles, when it ascends gently along the base of a spur lying parallel to the river. Now and then it crosses boulder-strewn nullah beds, but it is not until the actual snout of the Rimo is reached that the going becomes at all difficult. Here a series of deep ravines descending at right angles to the glacier have to be crossed, but they are tiresome rather than formidable.

I crossed two or three of these ravines and reached a position on the eastern side of the Central Rimo about a mile north of the junction. Time prevented me from going on though I could see no obstacle to stop me. Having returned to the glacier's snout I ascended the ridge of hills to the east to a height of about 400 feet, to obtain a clearer view of my surroundings.

I normally avoid glaciers. They are not happy hunting-grounds for a naturalist. Nevertheless, I have viewed from close quarters the glaciers that descend from Chumalhari and Haramosh. I have gazed on the Masherbrum glaciers from the top of the Hushe ravine, and once I spent a whole day—much to my shikari's disgust—watching the Ganri glacier from Nun Kun discharging into the Suru river.

But I had never seen a Karakoram glacier of the first magnitude before, and here was one spread out before me in all its grandeur. The sight was impressive beyond words. I had never dreamed of anything half so magnificent. From the west and north-west I could see the Southern and Central branches, each from 2 to 3 miles wide, snaking their way downwards from a series of beautiful snow peaks in the far distance. Down, down they came, mile after mile, their

sharp-pointed ice-pinnacles gleaming like silver in the sun. They met at my feet, and beyond the junction I could see issuing from their snouts countless streams which branched and meandered in all directions as they wound their leisurely way down towards the lake.

I had chosen the Chip-chap confluence as my base, in the hope that I should be able to visit both the Rimo glacier to the north and the Chong Kumdan dam to the south. I wished to see not only how much water was entering the lake, but also how far the lake-level was from the summit of the dam.

Ordinarily, when neither dam nor lake exists, traders descending the Shyok valley ford the river just below the Chip-chap junction to the right bank, as it is impossible to descend along the left bank on account of the perpendicular cliffs in the neighbourhood of the gorge. Since the lake existed, this course has been impracticable, and, as I had no boat in which to cross the lake, my only hopes of gaining the right bank were either to ford the Shyok below the snout of the Rimo glacier, or to traverse the glacier above its snout.

As I had made my way up the lateral moraine of the Central Rimo earlier in the morning, I had found that the ice-pinnacles, which from a distance of seven miles had looked so insignificant, were in reality seracs over a hundred feet high. As far as I could see, there was no way between them. One hope was therefore already shattered. To ford the streams below the snout of the Rimo was my only chance, and I therefore hurried downwards to test the possibility of such a venture.

Descending a steep nullah bed, which cut through the lateral moraine, I reached the base of the glacier a short distance above its snout. In front of me ran a turbid torrent fed by cascades of water which splashed into it from the melting seracs above. Feeling very Lilliputian amidst my surroundings and following the torrent downstream until I was clear of the glacier's snout, I tried to ford the stream.

At my very first step I plunged into the icy water almost up to the waist. It was futile to proceed. Even ponies or yaks would have been useless owing to quicksands; I was therefore reluctantly forced to return to camp, determined, if possible, to reach the dam from Saser Brangsa on the south.

On the 2nd August, I left the lake and ascended to the *Pulo* en route for the Karakoram pass. Of all the miserable bone-strewn encampments between Panamik and the Karakoram, I found this

Pulo the most unsavoury. My map (52E)* informed me that it boasted of 'three huts.' It did. And when I arrived I found them all occupied—one by a dead pony, the second by a dead donkey, and the third by a dead Yarkandi. Nor was this all. A few yards from the third hut, a pile of stones and mud had been erected against the face of a cliff to form a shelter from the wind. I looked inside this shelter and found it contained three skulls and other gruesome human remains. I passed on to Chajoshilga.

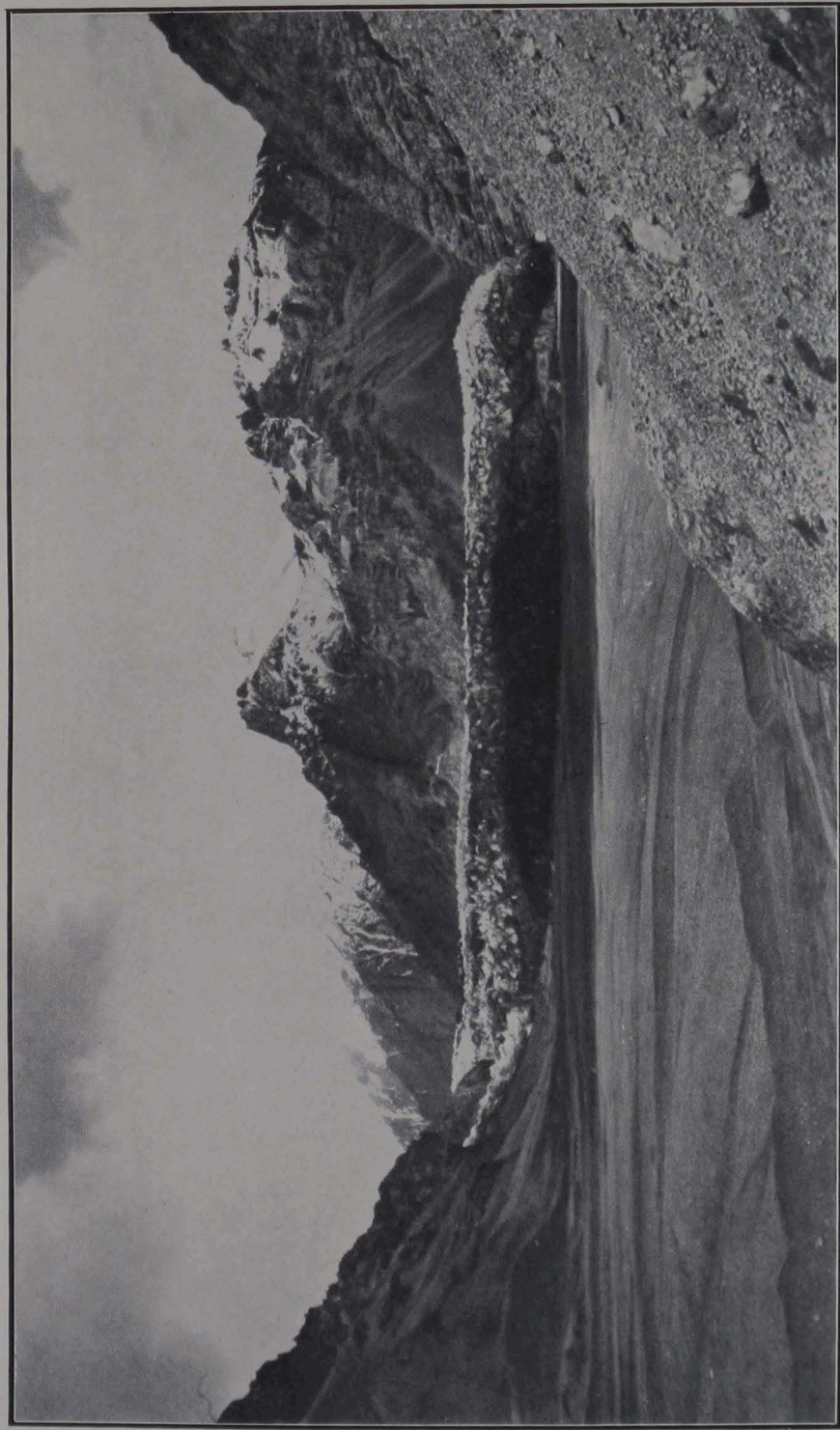
The following day I went up to the pass where I shot birds, picked flowers, and chased butterflies, and then returned along the Trade Route—avoiding the *Pulo*—to Saser Brangsa.

On August 9th, the day after my arrival there, I set off on foot once more for the dam up the right bank of the Shyok, taking with me a Ladakhi pony-man and my Kashmiri tiffin coolie. For three-quarters of an hour the going was all that could be desired, for a well-constructed path crept along the mountain slopes, 400 feet above the river. At the end of two miles we encountered a large land-slip, which had completely destroyed the track, and we were compelled to scramble over boulders and down the face of a cliff to the sandy river-bed. This we now followed for a short distance and then cut over a rocky spur. Here we struck the path again and the going continued good until we reached the moraine of the Aktash glacier, where it suddenly ceased.

The Aktash presented no obstacle as it was in retreat. Its ice-pinnacles were for the most part 200 yards from the Shyok, and only in one place did they actually reach the right bank. After passing the glacier, we marched up the river-bed towards some wonderful red limestone cliffs, opposite which the Kichik Kumdan appeared to descend and stretch right across the Shyok. My Ladakhi now remarked that this was the dam, and for a time I was tempted to believe him, so completely did the glacier seem to bar all onward progress.

I was not satisfied, however, and after an hour spent in crossing the Kichik Kumdan stream and in endeavouring unsuccessfully to worm a way between the ice-pinnacles of the glacier, we at last reached a point from which we could plainly see there was no lake immediately ahead. Obviously, therefore, this glacier was not obstructing the Shyok. We then followed the left bank of the Kichik Kumdan stream downwards, and found that the glacier's tongue terminated some

* The old atlas sheet, from reconnaissance surveys in 1864. A new map of this area from modern surveys is now available.



THE CHONG KUMDAN DAM FROM THE SOUTH.

Photo. F. Ludlow. Copyright, Times of India.

Photo-engraved and printed at the Offices of the Survey of India, Calcutta, 1929.

distance—probably 80 yards—from the left bank of the Shyok. Keeping to the Shyok river-bed we reached the north lateral moraine of the Kichik Kumdan and here right ahead of us, two miles or so to the north, we at last saw the dam.

There was no mistaking it this time, for we could see the great mass of ice stretched across the river-bed from bank to bank. Simultaneously we exclaimed, "There it is," each in our own language.

Ten minutes later, after a hasty meal, we were on the move again, but soon found ourselves in difficulties. A few hundred yards north of Kichik Kumdan, the Shyok flows at the base of some steep cliffs on the right bank. These were not impassable, but they reduced our progress to a snail's pace. We had very little time at our disposal since we must return to our camp at Saser Brangsa that evening. We therefore abandoned the right bank, forded the river, and marched up the left bank. On we went at a good pace, the great ice-barrier growing larger and larger as we progressed.

Suddenly to our dismay, when within half a mile of the dam, we discovered we had entered a veritable cul-de-sac. Below us lay a long deep pool of the Shyok, above us rose a precipitous cliff. In vain we tried to surmount these obstacles. We could neither ford the river nor scale the cliff. The only possible way of reaching the foot of the dam was to follow our tracks back to the ford and proceed up the right bank. But by this time the afternoon was well advanced, and already we could hardly hope to reach Saser Brangsa before dark. To reach the dam, climb the cliffs above it, and see the lake beyond, would have meant a bivouac in the open at nearly 16,000 feet, without food, fire or blankets. I confess I was not prepared to submit to this ordeal, so I reluctantly gave the order to return, and we reached Saser Brangsa in the dark, tired, footsore, and sadly disappointed. The next day I tried to persuade my Ladakhi pony-men to carry some of my baggage up to the dam, but they refused.

A word about the dam's dimensions. As I saw it through glasses from a distance of half a mile from the south, the glacier had evidently turned down the Shyok river-bed for 500 to 600 yards. From bank to bank of the main river the dam must have been between 350 to 400 yards long. At its snout, it could hardly have been less than 200 feet high, from whence it rose steeply upwards towards the lake. It was a black ugly-looking structure covered with rocks and debris. The weakest part of the dam seemed to be the part immediately adjoining the left bank. I doubt if there was much percolation through the glacier from the lake above. It seemed to me that the

water issuing from the snout was mainly due to the melting of the glacier itself.

I am painfully aware of the imperfections of my story. To write usefully on such a subject I ought to have possessed an elementary knowledge of glaciology and engineering. Then, perhaps, I might have judged whether the present dam will collapse suddenly, and if so, when the catastrophe will take place. As an amateur naturalist, I know none of these things.

INDUS FLOODS AND SHYOK GLACIERS.

MAJOR KENNETH MASON.

IN VIEW of the interest roused by the glacier block in the upper Shyok, and the effects of its possible burst and consequent floods, I have collected in this paper as much of the historical evidence of previous floods in the Indus basin as I have been able to find. It must be remembered that many of the early writers had an extremely limited knowledge of the geography of the region concerned, and that they were, therefore, somewhat liable to jump to erroneous conclusions, based on faulty or insufficient data.

As an example of this I may cite the great Indus flood of 1841, the origin of which was believed by several experts of the time to be in the upper Shyok valley. This belief was based on the analogy of the flood of 1835. Had the size of the Hunza and Gilgit tributaries been realised, such a mistake, which led to years of controversy, could never have been made. An obstruction as far up the Indus as Kumdan, 750 miles above Attock, cannot possibly render the Indus fordable at that place, for the Nubra, the main Indus, and the Gilgit rivers all contribute sufficient water to keep the level high.

I have also investigated the positions of the Shyok glaciers during the last 150 years, in the hope that their history would throw some light on the existing menace.

Transverse glaciers whose snouts project unchecked into main valleys are always liable to cause obstructions. A glacier flows mainly by regelation, that is, by alternate melting under pressure and refreezing. It slides forward, so to speak, on its melted ice. The glacier ends normally at the point where the rate of advance is balanced by the rate of melting. Should there be an excess of snowfall in the *névé* area of a glacier's basin, it is conceivable that

the body of the glacier may advance at a greater rate, especially if its bed is steep, so that, unless there is a balancing increase of melting at the snout, this snout will advance further across the valley, and possibly block it.

There are however in practice one or two important considerations which tend to prevent complete blocks. The bed of a glacier has generally an uneven fall. Where changes of slope occur there will be crevasses and icefalls ; near the snout there may be a "dead end." These features will take up some of the advance, before the snout becomes "alive" again.

Once the snout projects into the main river, there is erosion to take into account. Rivers in rapid flow, especially when carrying in suspension sharp moraine material, have enormous erosive powers, and frequently are capable of maintaining a passage under or round an advancing glacier, simply by tearing away the ice. Below such glaciers great ice-floes may frequently be seen, borne along by the swift current. The further down a river, therefore, the less likely are glacial obstructions.

A glacier snout is as likely to advance in winter as at any other time, for though a greater pressure may be required to melt the lower layers of ice upon which the glacier flows, there is almost a complete cessation of melting at the snout. And should the glacier reach the river-bed during winter, there is great danger of a complete block, for the river will be frozen and without erosive power.

Possibly when summer comes, a lake may form above the block, the percolation through the glacier's crevasses and tunnels being much less than the supply of water from upstream. It does not follow, however, that the dam will eventually burst and cause a catastrophe. The lake may fill throughout the summer nearly to the level of the dam and then freeze during the following winter. Early the next year percolation will again commence before the supply of water is resumed, by which time the lake may be almost empty. I saw this happening with the Kyagar dam across the upper Shaksgam, and it might quite easily happen in the upper Shyok.

Supposing the lake rises to the level of the surface of the glacier, it is even then by no means certain that the dam will suddenly collapse. A glacier is composed of consolidated layers of ice. Any transverse crevasses act as escapes to the water as the lake-level rises. During the summer they are eroded, in winter they tend to heal, and in the spring fresh ones may be formed. But the great masses of ice are usually tightly bound, and as a whole the body is compact.

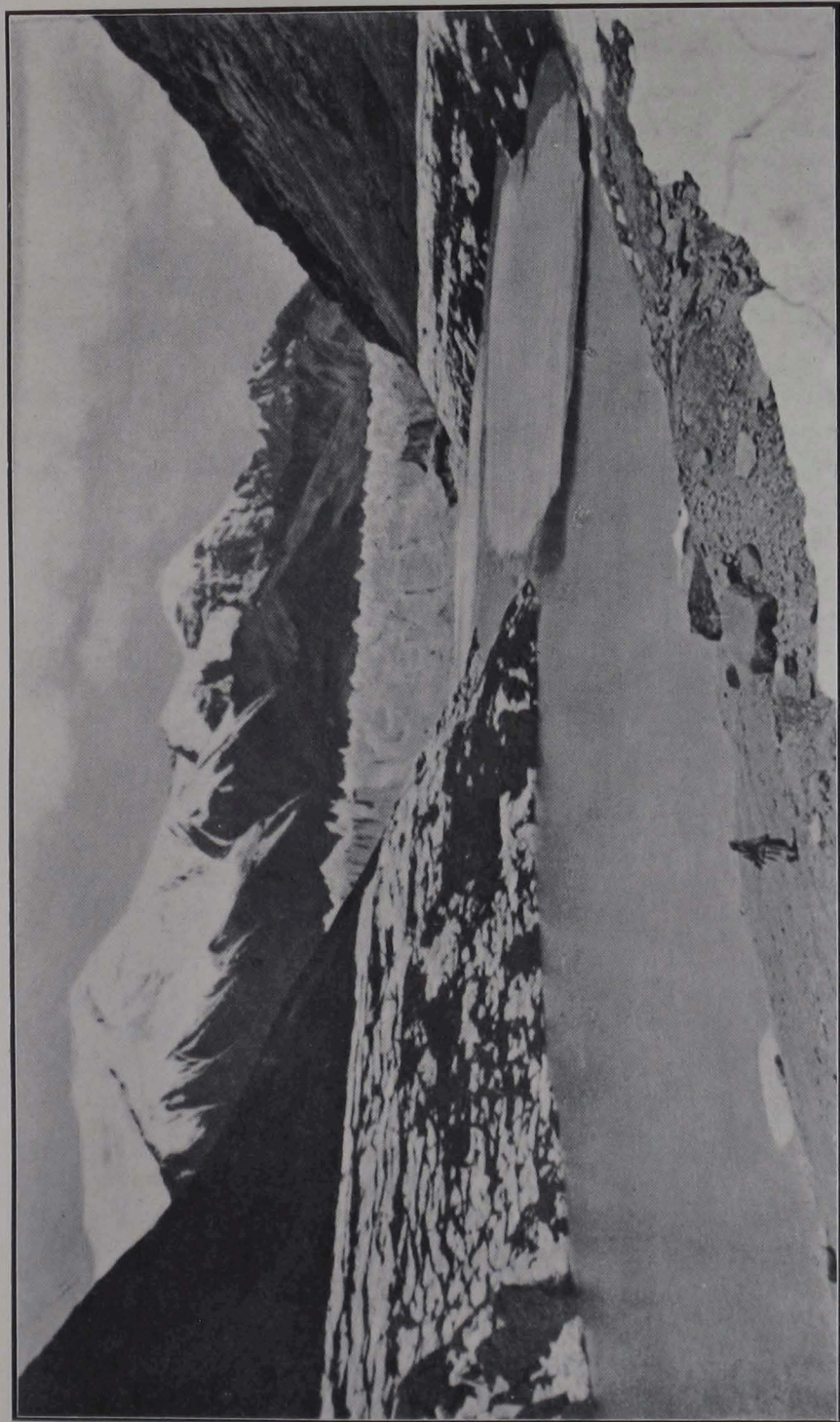
It is generally when a weak line occurs right through the breadth of the glacier that there is danger of collapse. From a study of the records of floods given below, it will be seen that floods caused by the Shyok glaciers appear to have occurred about 1780, in 1835, 1839, 1842, 1903, and 1926. Of these, only those in 1835 and 1926 seem to have been serious down the river as far as Skardu, and the effects of none were felt as low down the river as Attock, 750 miles away. If we examine the positions of the Shyok glaciers, we see that the valley has been blocked or almost blocked during the greater part of that time. Occasionally, indeed, we have records of one or other of them being clear of the main river. But throughout this period there has been continual danger of a block.

It is interesting to compare the effects of the two big floods in 1835 and 1926. On both occasions the villages of Deskit and Liakzun near the Nubra-Shyok confluence were badly damaged, and suffered some loss of life, while lower down the valley near Khapalu the low-lying lands near the river-bed were denuded of farms and the cultivation was destroyed. On both occasions damage, though not very serious damage, was caused below the Indus-Shyok junction near Gol, and at Skardu, but neither in 1835 nor in 1926 is there any recorded destruction below the confluence of the Indus and Gilgit rivers.

Compare the two great Indus floods of 1841 and 1858, the former caused by an earthen dam formed by the collapse of a spur of Nanga Parbat, and the latter by an obstruction, either to the Hunza river or in the Shingshal valley. In 1841, the Indus at Attock prior to the flood was fordable; the water rose about a hundred feet at that place, about 260 miles below the block, where the lake itself was estimated to have been a thousand feet deep. In 1858, the Indus at Attock was actually above normal prior to the flood. The river rose 55 feet in seven and a half hours at the same place, which was 400 miles below the obstruction.

It is important to distinguish between a glacier dam and a block caused by a rock fall. The latter is composed of heterogenous unconsolidated material, loosely bound together with earth and mud. A lake forming above it is certain to destroy it as soon as its level reaches the top of the dam. As has been mentioned above, a glacier may act as a weir and gradually let the waters disperse gently.

It is difficult to see how anything can be done to avoid these floods. Perhaps something might be done with blocks caused by landslides, provided they were not too big; but a dam a thousand feet



THE KYAGAR GLACIER DAM ACROSS THE SHAKSGAM VALLEY IN 1926.
The upper level of the ice-blocks on the hillsides indicates the winter level of the frozen lake. The lowered water level shows that percolation through the dam has exceeded drainage into the lake since winter.

Photo. Kenneth Mason.

deep and at least a mile wide at the base is a very large proposition, and the cost of demolishing it would probably be prohibitive.

With glacier obstructions, even when likely to cause serious inundations, such an expense could never be justified. As will be seen from the notes which follow, the two danger spots in the Indus basin are the Shingshal valley and the upper Shyok. In both areas we have large glaciers projecting transversely from the main Muztagh-Karakoram range into valleys of considerable size. These glaciers have large *névé* fields in regions of heavy snowfall, and they have comparatively steep beds; their snouts are consequently liable to seasonal variation. The block is usually complete when the glacier snout has not only stretched across the valley, but also turned down it for a distance of several hundred yards. From one to two miles of ice some three hundred feet deep would have to be demolished in order to open a passage. It would be a pretty piece of engineering, but it is almost certain that as soon as the breach is made, the glacier will flow onward again and cause another block. Some such suggestion appears to have been made after the flood of 1858, for I find, in a letter addressed to the Secretary of the Punjab and its Dependencies by Major Becher, the Deputy Commissioner of Kashmir, and dated 1st July, 1859, the following remark: "As regards the removal of the obstacle (when such an accident may again occur) by our scientific efforts, I think it is impracticable: the labour of removing such vast masses of mountains, or of glaciers, would be immense."

Much may be done by careful watching and a sound system of warning. In the Shingshal valley men are despatched each year from the village of Shingshal to report on the positions of the glaciers, and as long ago as 1893 warning of a glacier burst was given in time to prevent loss of life. The problem is not quite so easy in the upper Shyok, for the nearest village, Panamik in the Nubra valley, is four marches away, and separated from the glaciers by the Saser pass. It is however not difficult, and an annual expenditure of a very small sum would prevent scares which are apt to be more costly in the long run.

INDUS FLOODS.

1780 ? *Shyok Glacier Flood* ?—The evidence for this flood is very scanty. Henry Strachey found in 1848 an old woman of eighty in the village of Shyok who had witnessed a great flood about seventy years before, and who described it to him to have been on a scale similar to that of 1835 (*Physical Geography of Western Tibet*, p. 55).

1826 ? *Flood* (origin unknown).—Captain Alexander Cunningham attributes a flood reported to him to have occurred in this year, to a block in the upper Shyok. Henry Strachey, however, writes that there seems to have been no flood of any note in the Shyok between 1780 and 1835. The date and origin of this flood are, therefore, both open to doubt (*Physical Geography of Western Tibet*, p. 55). As Cunningham is known to have been incorrect in assigning the great Indus Flood of 1841 to the Shyok glaciers, it is reasonable to suppose that he may also have been incorrect about the origin of this.

1835¹. *Shyok Glacier Flood*.—Henry Strachey describes this flood from the testimony of Yarkandi traders. According to them it occurred on the 17th day of the 5th month of the *Sheep Year*, i.e., some time in June 1835. It must be remembered that Strachey had only Thomson's description of the upper Shyok, and at that time the existence of the Chong Kumdan glacier was not established.

It is therefore uncertain which of the three glaciers was the cause of the block in the valley. Strachey writes that the block was effected by the glacier after abutting upon the steep wall upon its eastern side, being thrust upwards by pressure from behind till the ice reached a height of perhaps 700 feet. When the dam burst the Gapshan lake was liberated.

The village of Shyok, the highest permanent habitation in the valley, and distant about 100 miles from the Kumdan glacier is situated on a bank 200 to 300 feet above the river and was above the level of the flood, which from accounts appears to have passed the village during the night, with a rise of about fifty feet. The flood passed the Nubra-Shyok junction, about 150 miles from Kumdan, before daybreak and had run off by noon of the same day. The lower half of the village of Liakzun at the junction was swept away, ten out of twenty-two houses, with all their inmates, men and cattle, being destroyed ; and the village of Deskit suffered equal loss in its low-lying quarters. Strachey estimates that the river here rose not more than ten feet. "In Chorbat of Balti, from 30 to 80 miles below Mid-Nubra, and chiefly in the further part of that distance, no less than 150 farms were swept away from the low-lying lands in the river-bed,

¹ Vigne, writing in 1838, says that this flood occurred five years before Alexander Cunningham in his *Ladak*, and Becher in the *Journal of the Asiatic Society of Bengal*, quoting from Vigne, accept the date of the flood as 1833. It is difficult now to make certain which date is correct, but I prefer to accept 1835 on the evidence of Strachey.

but with less destruction to human life, as the flood passed here between daybreak and sunrise....”

The main portion of the flood-water is said to have run off from Chorbat in a few hours, but the river was above normal in this confined part of the valley for two days. There does not seem to have been much damage below Khapalu (*Physical Geography of Western Tibet*, pp. 55—57). This 1835 flood had no consequences whatever in the lower Indus, and passed completely unnoticed in Hazara, Chach, and Attock (Becher in *J.A.S.B.*, 1859, p. 227).

1839. *Shyok Glacier Flood*.—Henry Strachey records another flood due to the same cause in the next *Hog-Year*, 1839; “but this was of much less extent, and passed Nubra at midday; and as all the villages liable to inundation had been destroyed by the former flood, merely carried away the cattle and herdsmen that happened to be out at sea in the river flat” (*Physical Geography of Western Tibet*, p. 57).

1841. *The Great Indus Flood*.

(*The following account of this catastrophe is compiled from all the evidence collected by Becher, Henderson, Montgomerie, Abbott and Drew.*)

In December 1840 or January 1841, the west side of the Lechar spur of Nanga Parbat, opposite Gor, was precipitated into the Indus by an earthquake. The obstruction was approximately a thousand feet deep and completely closed the main river. In April 1841, Jabbar Khan, the Chief of Astor, warned Kashmir of this block and stated that the river would probably be held back for another month, and about the same time Raja Karim Khan of Gilgit sent warnings, written on birch-bark, down the main valley of the Indus.

At the end of May, or more probably in the beginning of June, the waters seem to have reached the top of the obstruction, and the lake, which then extended for nearly forty miles in length, and which was a thousand feet deep at the dam, was liberated.

Prior to the burst, the Indus at Attock was, and had been for many months, easily fordable, yet, in spite of this state and the warnings received, little notice was taken. The lake emptied itself in twenty-four hours, and swept everything before it.

A Sikh army was encamped on the plain of Chach, near Attock, close to the river. About 2 p.m. on a day very early in June the roar of waters was heard, and before the soldiers could reach safety, the river came down with an immediate rise of nearly eighty feet.

An interesting account of the flood narrated by a zemindar of Torbela is given by Captain Abbott in the *Journal of the Asiatic Society of Bengal*, Vol. XVII, 1848, p. 231, *sqq.* :—

“ We began to exclaim, ‘ What is this murmur ? Is it the sound of cannon in the distance ? Is Gundgurh bellowing ? Is it Thunder ? ’ Suddenly someone cried out : ‘ The Rivers come ! ’ And I looked and perceived that all the dry channels were already filled and that the river was racing furiously in an absolute wall of mud, for it had not at all the appearance or colour of water. They who saw it in time easily escaped. They who did not, were inevitably lost. It was a horrible mess of foul water, carcasses of soldiers, peasants, war-steeds, camels, prostitutes, tents, mules, asses, trees, and household furniture, in short every item of existence jumbled together in one flood of ruin. For Raja Goolab Singh’s army was encamped in the bed of the Indus at Koolaye, 3 coss above Torbaila, in check of Poynda Khan. Part of the force was at the moment in hot pursuit, or the ruin would have been wider. The rest ran, some to large trees which were all soon uprooted and borne away, others to rocks which were speedily buried beneath the waters. Only they escaped who took at once to the mountain side. About five hundred of these troops were at once swept to destruction. The mischief was immense. Hundreds of acres of arable land were licked up and carried away by the waters. The whole of the Seesoo trees which adorned the river’s banks : the famous Burgutt tree of many stems, time out of mind, the chosen bivouac of travellers, were lost in an instant. The men in the trees, the horses and mules tethered to the stems all sunk alike into the gulf and disappeared for ever. As a woman with a wet towel sweeps away a legion of ants, so the river blotted out the army of the Raja ”

A letter is quoted by Dr. Falconer as early as the 6th July, 1841, probably not more than a month after the catastrophe (*Journal of the Asiatic Society of Bengal*, Vol. X, 1841, p. 616). “ Hundreds of villages and towns were swept away, with thousands of human beings and cattle. The Lundaye (or Cabul river, which joins the Indus close above the fort at Attock) had its water held up and forced back so as to inundate the towns of Nowshera and Akora. In the Huzara country, the flood swept away artillery guns with many hundreds of infantry and sowars ; and old Sham Sing Atarewallah, a Seik sirdar, had all his camp and followers carried downstream. I have as yet only heard of the

course of the inundation as far as Dera Ismail Khan, whence also the accounts are very distressing, and so they will continue to be, I suppose, till it reaches the sea, for nothing can contain it. . . . ”.

The actual height of this flood at Attock is believed by early writers stationed there to have been approximately 92 feet above the low winter level of the river and approximately 42 feet above the normal high flood-level of summer. Early accounts agree that there was a definite head of water, and not a mere rise of the river level.²

1842. *Shyok Glacier Flood*.—According to Longstaff, a small flood took place in this year (*G.J.*, Vol. XXXV, p. 647).

1844. *Gilgit River Flood*.—Drew obtained evidence of a flood in the Gilgit valley in 1844. It appears to have had its origin near the head of the Ishkuman valley, which Hayward recognised as the source of floods, past and to be expected. This flood appears to have spent itself by the time it reached the Indus. It passed unnoticed at Attock (*Jummoo and Kashmir Territories*, p. 418).

² Dr. Falconer in a letter to the *J.A.S.B.*, dated July 6th, 1841, commented on the first reports of the cataclysm. These reports placed the site of the obstruction near “the plains of Gilgheet,” and stated that it had held back the Indus, so that “the river at Attock was converted into an easy ford.” Falconer set aside the Gilgit origin and propounded the theory that the stoppage occurred much higher up, on the Indus above Skardu, or more probably in the upper Shyok (approximately 750 miles above Attock). He had himself visited Skardu, where he had learned from Raja Ahmad Shah that great floods occurred occasionally (one had happened as recently as 1833 or 1835), in consequence of the advance of the upper Shyok glaciers. Afterwards Captains Abbott and Alexander Cunningham both attributed this 1841 catastrophe to glacier blocks in the upper Shyok, and as late as the 7th January, 1859, Captain Henderson, who was stationed at Attock, and who took careful note of the great flood of 1858, wrote to the *J.A.S.B.*, supporting this view. It must be remembered that at that time the Gilgit and Hunza branches of the Indus were almost unknown, and that a block as high up the river as the Shyok could never cause the Indus at Attock to be fordable unless blocks occurred simultaneously in the main Indus and in the Hunza river.

In July 1859, Major Becher, the Deputy Commissioner of Kashmir, wrote to the *J.A.S.B.*, and quoted a certain newswriter, Mirza Ahud, who had written to Sir George Clerk at Ambala in April 1841, prior to the bursting of the dam, and placed it on the Indus below Bunji. Independently of Becher, Captain Montgomerie of the Great Trigonometrical Survey of India came to the same conclusion, after questioning men who had seen the dam while the lake was in existence. F. Drew, in his *Jummoo and Kashmir Territories*, p. 414, *sqq.*, publishes an account of the flood which agrees closely with the account given above, and there is not the slightest doubt that the dam was directly caused by a great fall of rock from the western spurs of Nanga Parbat.

1855. *Middle Indus Flood.*—Godwin Austen reports a minor flood in the middle Indus about 1855. His report runs: "Camp Gol on Indus, 29th August, 1860. A flood occurred at Gol about five years ago in the month of June. Very muddy water came down the ravine (slowly at first), and the people who saw it left their houses and ran up the hillsides. Twelve old men, who could not run away, were drowned, twenty houses and about five hundred apricot trees, were washed away. There was but little snow on the hills at the time, and the ravine is by no means a large one. The villagers go up it constantly and yet were not aware of its being in any way dammed up, though the water must have been in considerable quantity, as the flood altered the course of the Indus. It is a mystery to me where sufficient water could have been collected. This account was given by Wazzir Husain of Gol" (*J.A.S.B.*, Vol. XXX, 1860, p. 107). Gol is about four miles below the Shyok-Indus confluence.

1858. *The Second Great Indus Flood.*

(The account of this flood is taken from the memorandum written by Captain Henderson, who was stationed at Attock at the time the waters passed that place.)

Captain Henderson states that the Indus river actually rose earlier this year than normally, and that it was far from fordable at Attock throughout the year. He was actually on the river in a small row-boat at 6 a.m. when the first flood-waters began to arrive at Attock. He records that the river rose approximately 26 feet in the first hour, 12 in the second, 7 in the third, 4 in the fourth, and 6 in the next 3½ hours when it attained a maximum at 1-30 p.m. It thus rose 55 feet in 7½ hours. There was no wall of water or wave.

The annual flooding at Attock in July and August normally reaches fifty feet. On this occasion it reached 80 feet above its cold weather level, i.e., 30 feet above its normal, and only 12 feet below the level of the great flood of 1841.

The waters extended over the Chach plain, and rolled over the stream of the Kabul river, filling up its channel and adjacent low ground to a length of thirty miles from the junction, with an average breadth of more than two miles, and a depth of 60 feet above the original level of the stream near the junction. The Kabul river acted as a safety valve and, at the expense of much destruction of this well-cultivated tract of country, saved the lower valley of the Indus.

Below Attock the flood's violence rapidly diminished. Between Shadipur and Makhad the rise was only 10 or 12 feet above the normal

flood. At Kalabagh it was only 8 feet above, and below that place it was insignificant.

The fall of the river at Attock was slow at first. After high flood it only dropped eight feet in five hours. It remained above normal flood throughout the 11th August until evening. During the night of 11/12th it fell twenty feet, and on the 12th the river was almost down to its pre-flood level. The waters of this flood, therefore, took approximately 48 hours to pass Attock (*J.A.S.B.*, Vol. XXVIII, 1859, pp. 199 *sqq.*).

The site of this dam was certainly on the Hunza river or a tributary to it, for the gateway of Nomal Fort was found among the debris.³ Major Becher early in 1859 questioned men from Gilgit, Hunza, Nagar and Gor. All agreed that the obstruction was in the Hunza valley about a day's march above the fort of Hunza (Baltit). It was stated to have been caused by the subsidence of a mountain-side called Phungurh, on the left bank, which collapsed owing to the action of rain and snow during the winter of 1857-58. The river was dammed for six months, during which time warnings were sent down the main river and down the Indus (*J.A.S.B.*, Vol. XXVIII, 1859, pp. 219 *sqq.*).

Captain Montgomerie of the Survey of India undertook independent inquiries and came to the same conclusion as Becher ; and Drew, in his *Jummoo and Kashmir Territories*, p. 419, sums up the evidence, and after inquiring again at Gilgit, concluded that Becher and Montgomerie were right, except that he placed the barrier in the Shingshal tributary of the Hunza river and not in the main valley itself. According to Drew, the flood was caused by "the bursting of the barrier of a lake that had been made by a land-slip, not by a glacier, in the Shin(g)shal valley."⁴

³ Captain Henderson of Attock had already accepted the fallacy that the 1841 flood had its origin in the upper Shyok glaciers, after reading and being convinced by the writings of Abbott and Cunningham. Owing to certain similarities between the two floods and to the fact that warnings were received on both occasions down the Indus, he concluded that the 1858 flood was caused by the Shyok glaciers also. Where the two occasions differed, Henderson assumed that the account of the earlier one was at fault, and he paid no heed to the very important difference that while the river at Attock before the 1841 flood was fordable, it was during the summer of 1858 higher than normal. There is nothing in Henderson's account of the happenings at Attock incompatible with a Hunza valley origin for the latter, and I feel certain that Henderson was wrong.

⁴ This mention of the Shingshal valley is the first that I have been able to trace in any records. Drew's account was written in the early 'seventies,

Mr. H. Todd, the present Political Agent of Gilgit, who has kindly looked through these notes has now written to me as follows :—" I am surprised that you do not refer to the Ghammesar landslide some seven miles above Altit and one mile below Atabad. I think it must have been responsible for a very big flood—probably the one that occurred in 1858. At Ghammesar a huge landslide from the mountains on the left blocked up the valley. The people say that the lake stretched right back to Pasu The Mir points out a line of silt on the hill above the present water level at Pasu, and declares it to be the bed of the lake then formed. This would make the lake of enormous size. To make such a rise as you mention at Attock from such a small river as the Hunza, there must have been a tremendous accumulation of water, so perhaps he is right."

This account agrees so closely with the contemporary evidence obtained by Becher and Montgomerie, that I feel certain that the Ghammesar landslide was the cause of the 1858 flood.

1865. *Gilgit River Flood*.—Drew mentions a flood which passed Gilgit at the end of June 1865, or beginning of July, and which, like that of 1844, originated in the Ishkuman valley. Five men of the guard at Gilgit rope-bridge were drowned, but the effects of the flood seem to have been very local, and it seems to have passed down the Indus unobserved (*Jummoo and Kashmir Territories*, p. 420).

1873? *Hunza Valley Flood*.—In 1913 I was informed by the head man of the village of Pasu that about forty years before that date, the Batura glacier had advanced and blocked the Hunza valley, causing a lake to form north of it. I was told that this obstruction eventually burst, and that the consequent flood carried away the old village of Pasu, and caused destruction down the valley.

The whole appearance of the Hunza valley about Pasu shows evidence of having been badly damaged at some time by water, but I am not convinced that this was due to a flood. And the actual date of the occurrence is very much open to doubt. I do not believe that the Batura glacier has blocked the Hunza valley in recent years, for there is much too much water draining into it during the summer. The current of the river is in fact, in my opinion, so strong in summer at this point, that erosion would almost certainly keep a channel open.

before we knew where it was or what it contained ; and his enquiries were sufficiently long after the occurrence for him to be liable to error, especially in view of the then prevailing geographical ignorance of Hunza.

Nor is there any other record of a flood about 1873, certainly not in the Indus valley, which must have been affected if the main valley had been obstructed. I therefore suggest that the destruction of the old village of Pasu was caused by the 1858 block in the Hunza valley, near Ghammesar, which formed a lake extending to and submerging Pasu.

1893. *Shingshal Valley Flood*.—Sir Francis Younghusband, in the discussion after the Vissers' paper before the Royal Geographical Society on 22nd February, 1926, remarked:—"In 1893, there was a glacier block (in the Shingshal), which burst in that year. The lake was watched and warning given. Disaster was thus prevented" (*G.J.*, Vol. LXVIII, p. 457).

1903. *Upper Shyok Valley Flood*.—Dr. T. G. Longstaff records:—"In 1903 a bad flood occurred, which Oliver (British Joint Commissioner for Ladakh) attributes to the bursting of the Kichik Kumdan dam" (*G.J.*, Vol. XXXV, 1910, p. 649).

1906. *Shingshal Valley Flood*.—A glacier in the Shingshal valley dammed the river prior to July this year, and a lake formed behind the barrier. "In July a most serious flood was caused in this way, which, amongst other damage, wrecked the suspension bridge at Askurdas, and the bridge across the Gilgit river at Chamogah and practically destroyed the whole road between Nomal and Chalt" (*Frontier and Overseas Expeditions from India*, Vol. I, p. 10).

1926. *Upper Shyok Valley Flood*.—In June 1925 the Roosevelt expedition found the Shyok valley blocked by the Chong Kumdan glacier, and was forced to turn back and make a detour over the Depsang plains. This block appears to have continued throughout the following winter and spring. In June 1926 the valley was still blocked, and the lake which had formed above extended to beyond Yapchan (Gapshan), some six miles above the dam. The depth of water in the Shyok river was 1 foot in June and 2 feet in October some three weeks before the ice-barrier gave way.

In late October the dam broke, and the pent-up lake escaped and flooded down the Shyok. The flood swept down the valley and carried away the suspension bridge at Tirit, just above the Nubra-Shyok confluence and 150 miles from the Kumdan snout. The village of Deskit, near the same confluence, was almost destroyed, and the excellent pony-road between Deskit and Khapalu, completed in 1912, was torn away in a number of places. Wherever cultivation was low-lying, as at Abadan and Surmo, it was completely destroyed, and the fields buried beneath an avalanche of boulders; and except

for a few houses on a knoll, the whole village of Abadan, 250 miles from the Kumdan glacier, and consisting of 23 houses, was destroyed. In the gorges between Unmaru and Biagdangdo, some 24 to 36 miles below the Nubra confluence, and from 182 to 194 miles below the dam, the flood is said to have passed about 70 feet above the normal flood level. This gorge checked the flow, and permitted the flood to expend some of its force up the broad Nubra river, where the village of Liakzun was almost wiped out, and where some central Asian caravans suffered loss. The flood-waters do not appear to have travelled up the Nubra more than about ten miles, and the loss of life appears to have been very small.

Skardu is approximately 350 miles below the site of the Shyok dam; very little damage occurred at this place in 1926. Bunji, 130 miles lower down, suffered no ill effects, and the suspension bridges above and below this place were undamaged. At Attock, 750 miles from the Shyok dam, the flood seems to have passed almost unnoticed.

1927. *Shingshal Valley Flood*.—Captain Morris records that in June or July “one of the glacier lakes above that place—(Shingshal)—burst and caused heavy floods in the valley.” In 1925 a considerable lake was observed above the Khurdopin glacier, under which the waters then found an outlet. It seems probable that this outlet became choked, probably by pressure from behind, and that the catastrophe, which was predicted by the Vissers in 1925, occurred two years afterwards, though the damage does not appear to have been severe (*Among the Karakoram Glaciers*, p. 128; *G.J.*, Vol. LXXI, p. 525).

THE CHONG KUMDAN, KICHIK KUMDAN, AND AKTASH GLACIERS.

The following notes have been collected to show as far as possible the positions of the snouts of the three glaciers in the upper Shyok which are liable to cause obstructions to the main valley. It will be observed that during many of the years the actual positions are not available. Fortunately, however, the main trade route gives some indication, for when all the glaciers are clear of the Shyok river-bed, traders pass directly up the valley. When one or more of the glaciers project into the river-bed, summer caravans must cross the Shyok at Saser Brangsa and take the Chongtash-Murgo route to the Depsang plains. This fact is, however, no proof of a complete block, for whereas in summer there may be too much water in the Shyok for

caravans to ford immediately below the glaciers, in winter the level is so diminished that there may be a clear passage over the river ice. The state of the terminal ice can only be inferred either by an actual visit to the snouts, by the condition of the Shyok ford at Saser Brangsa during the months of high water (July to September), or by the liberation of a lake caused by the bursting of a glacier dam. Nor can small seasonal advances and retreats of the glacier snouts be determined when these snouts project into the river, for there is no means of estimating the amount of terminal ice eroded by the current.

All three glaciers are of the transverse type. The lengths are Chong Kumdan, 9 miles; Kichik Kumdan, 7 miles; Aktash, 5 miles. Their falls, 3,000 feet (333 feet per mile); 3,500 feet (500 feet per mile) and 2,000 feet (400 feet per mile), respectively.

About **1780**.—Henry Strachey in 1848 obtained evidence of a flood caused by the bursting of one of the Shyok glacier dams about 70 years earlier (*Physical Geography of Western Tibet*, p. 55).

1812.—Mir Izzet Ullah passed up the banks of the Shyok river, "beyond the glacier of Khamdan" (*Calcutta Quarterly Oriental Magazine*, 1825, Vol. III). The glaciers appear to have been clear of the river for Izzet Ullah writes:—

"On our left hand between South and West is a mountain of ice, which remains unmelted throughout the year" (*Travels beyond the Himalaya*, by Mir Izzet Ullah, transl. H. H. Wilson in *J.A.S.B.*, Vol. VII, 1842-43, p. 297).

1812-24.—All glaciers appear to have been clear of the river during this period, and there seems to have been no flood during this time. About 1824, the snouts were about a quarter of a mile from the eastern wall of the valley (*Physical Geography of Western Tibet*, p. 56).

1826 ?.—A flood in this year is attributed by Captain Alexander Cunningham to the glaciers in the upper Shyok. Both the date and the origin are open to doubt (*J.A.S.B.*, Vol. XXVIII, p. 222).

1829-30.—A doubtful itinerary by Gardiner during this period seems to refer to the Karakoram route (*J.A.S.B.*, Vol. XXII, p. 284). The places mentioned are unrecognisable, and nothing can be deduced.

1835⁵.—Henry Strachey describes the upper Shyok glacier block and subsequent flood in *Physical Geography of Western Tibet*,

⁵ Vigne describes a flood in 1833, or rather states that a flood occurred five years before 1838. According to Strachey, there was no flood between about

p. 55. According to him this flood was caused by the Chong Kumdan glacier, which after abutting upon the steep wall of rock upon its eastern side is "thrust upwards by the pressure from behind till the ice reaches a vast height . . . perhaps 700 vertical feet, above the valley bottom." This dam burst in June 1835, but in spite of the disastrous effects, only the terminal ice was carried away, and the trade route was still unable to follow the valley past the snouts.

1839.—Strachey writes: "In spite of so great a cataclysm as this in 1835, a debacle from the Kumdan glaciers occurred again in the next *Hog-Year* or 1839" (*Physical Geography of Western Tibet*, p. 57).

1842.—According to Longstaff, another small flood took place in this year (*G.J.*, Vol. XXXV, p. 647). The period 1835—1842 appears to have been one of maximum advance of the ice.

1848.—In August Dr. Thomas Thomson, the first Englishman to reach the Karakoram pass, examined the Shyok glaciers from Saser Brangsa. On the 15th he found the average depth of the Saser ford to be about a foot and a half, while at one spot it was two feet deep. At this period of the year this almost certainly indicates a partial block of the valley above. Later in the month he visited the Aktash and Kichik Kumdan glaciers.

The Aktash glacier extended right across the Shyok river, which flowed out below the ice. The ice, however, did not extend to the foot of the precipice on the left bank as far as Thomson could see, but he was unable to judge the position of the snout in the middle. Thomson noted the ancient moraine, "deposited at a period when the glacier must have been more bulky than it now is," and crossed the glacier with some difficulty.

He also found the Kichik Kumdan glacier impossible to cross, for he records:

"At the bottom of the valley it spread out in a fan-shaped manner to a width of at least a mile; perhaps indeed much more, for as I failed in getting round it, I was unable to ascertain precisely." He found that at its south-east corner it was nearly a hundred yards from the river, and here was its true snout from which issued a considerable

1780 and 1835; and he states that it occurred "on the 17th day of the 5th moon of the *Sheep Year*," i.e., in June 1835. It seems certain that Vigne refers to this flood, and that both Cunningham in his *Ladak*, and Becher in *J.A.S.B.*, Vol. XXVIII, 1859, p. 226, are wrong in accepting Vigne's date. According to Strachey, Cunningham is wrong also in assigning the 1826 flood to the Shyok glaciers.

stream. Further on he found the glacier "fairly projecting into the Shyok in such a manner that I could not see anything of what lay beyond." The terminal cliff varied in height from fifteen to thirty feet.

Thomson believed that there was a third glacier beyond, but he did not see it. He adds that it was highly improbable that any permanent lake existed above the glaciers (*Western Himalaya and Tibet* by Thomas Thomson, pp. 420, 440 *sqq.*).

1855.—Captain Henderson found the glaciers projecting into the Shyok in August of this year (*J.A.S.B.*, Vol. XXVIII, 1859, p. 222).

1862.—First survey of the upper Shyok by E. C. Ryall of the Survey of India. The Aktash glacier is shown one mile, and the Kichik Kumdan half a mile back from the river. The Chong Kumdan is shown as closing the road, but not blocking the river.

1864.—W. H. Johnson, Survey of India, found that the summer road was over the Depsang plains, so presumably the valley route was again rendered impassable by the glaciers.

1865.—During the winter Johnson passed down the Upper Shyok. His itinerary is thus described :—

"The route from Gapshan passes some large glaciers and lays down the right bank of the Shyok river, till its junction with the above-mentioned stream (the Saser) whence it ascends to Sarsil (Saser Brangsa)." From this it would appear that all the glaciers were clear of the Shyok river in this winter, though it is possible that Johnson passed the snouts on the river ice, the river itself being of course much reduced from its river level (*Johnson's Itineraries*, in old Survey of India Report).

1869.—R. B. Shaw in July returned from Kashgaria. The Chong Kumdan projected into the Shyok and compelled him to ford the river. The Kichik Kumdan completely blocked the road, having advanced since April of this year, when one of his guides had passed the snout by the river-bed. Shaw found the ice of the glacier right up to the cliffs of the left bank of the Shyok, the river forcing its way under tunnels in the ice. The Aktash glacier does not seem to have formed any obstacle (*High Tartary, Yarkand, and Kashgar* by R. B. Shaw, p. 433, and illustrations, p. 434).

1873.—Gordon and other members of the Forsyth Mission made their way round the snouts of the Kichik and Chong Kumdan glaciers. Of the Kichik Kumdan he writes : "The end of the glacier continues down the right bank of the stream" (i.e., the Shyok) "for over two miles, forming a perfect wall of ice rising from the water about 120

feet, and showing a surface covered with countless pinnacles and points. Portions of it still stand at several places on the opposite bank, where the original mass was forced against the great up-rising red cliffs, and blocked the stream, thus forming a lake, which at last burst this ice-barrier by the increasing pressure of its collected waters" (*The Roof of the World*, pp. 17, 18, and Frontispiece).

Of the Chong Kumdan he says: "It shoots down from a lateral valley to the north-west, and almost touches the opposite side of the valley. It probably at one time formed a long and extensive shallow lake above" (*Op. cit.*, p. 8 and illustrations). Gordon does not mention the Aktash glacier, which may, therefore, be assumed to have been clear of the river.

1889.—Younghusband travelled by the Depsang route. At this period, therefore, it may be presumed that the road up the valley was blocked (*The Heart of a Continent*, p. 225).

1894.—Church and Phelps passed the snouts of all the glaciers.

1899.—The British Joint-Commissioner commenced building a road along the valley. It was carried beyond the Aktash glacier, but progress was arrested by the advance of the Kichik Kumdan glacier. Traders however continued to pass round the ends of all glaciers in winter-time, up to the winter of 1902-03.

1902.—In April, Sven Hedin passed the snouts of the glaciers on the river ice. The Aktash glacier was well clear of the road. The Kichik Kumdan was stretching almost to the cliffs across the river, and there was only a narrow passage 10 metres wide near the cliffs. The Chong Kumdan did not stop the road, although there was little room to spare, it being about 30 to 40 metres from the diminished river-bed (*Scientific Results of a Journey in Central Asia*, Vol. IV, p. 410, where seven photographs are shown; see also *G.J.*, Vol. 36, 1910, p. 186, where there is a discussion on Longstaff's observations of 1909).

1903.—A bad flood occurred in the Shyok, attributed by the British Joint-Commissioner to the bursting of the Kichik Kumdan dam.

1905.—The Aktash glacier advanced across the river-bed but the river forced a passage under the ice. Ellsworth Huntington in June took the Depsang route (*The Pulse of Asia*, p. 81).

1906.—David Fraser wrote of his visit to the upper Shyok in 1906: "I saw it" (i.e., the Aktash glacier) "when crossing the Shyok river at a distance of about five miles. Unfortunately I was unable to visit the upper side owing to the state of the water" (*Marches of*

Hindustan, p. 142). It is probable that the Aktash did not completely block the valley, or there would not have been sufficient water to deter Knight from visiting it.

1908.—Sir Aurel Stein crossed from Central Asia over the Depsang plains in October of this year. It seems probable that the Shyok was almost if not entirely blocked by one or more glaciers at this period (*Ruins of Desert Cathay*, Vol. II, p. 486).

1909.—All three glaciers had advanced and blocked the Shyok. Longstaff, who made this observation, shows on his map the Aktash and Kichik Kumdan glaciers right across the river-bed, while he shows the Chong Kumdan as leaving a passage for the river. No lakes are, however, shown upstream of any of the glaciers, and none are mentioned. It appears, therefore, that the river escaped through tunnels or by percolation through the sandy bed. About the Chong Kumdan Longstaff writes: "Its snout projected far into the river, but we were unable to see whether any part of it reached the further bank (*G.J.*, Vol. XXXV, p. 641, where there are photographs of the Aktash glacier across the road and of the others from the south. See also the appendix to Longstaff's paper, p. 647, of the same Journal.) Sven Hedin considered that there had been a considerable advance of the Aktash glacier since 1902 (*G.J.*, Vol. XXXVI, 1910, p. 186).

1914.—De Filippi put his depot down on the Depsang plains. The Rimo glacier was carefully surveyed and the Chong Kumdan glacier sketched. The latter is shown on Wood's map as reaching the Shyok river bank. The Kichik Kumdan and Aktash glaciers are not shown on Wood's map, which omits the portion between the Chong Kumdan and Saser Brangsa. Wood in his report writes that in June, Shib Lal of the Survey of India, was sent back from the Depsang plains, to "carry out so far as he was able a survey of the old route up the Shyok river. He found the Kumdan glaciers blocking the river, and was unable to cross them." Presumably the Kichik Kumdan is referred to. (*Explorations in the Eastern Karakoram and the Upper Yarkand Valley*, p. 7).

1919-1925.—I was told in 1926 that the valley route had been open for six years previous to 1925.

1925.—The Roosevelts, who passed up the valley in June, write: "Started up the Shyok river from Saser. We had to ford some five times during the day We passed the next fords without trouble. Just when we thought the worst of the difficulties were behind us, we turned a bend and saw the Rimo glacier stretched across

the entire valley Two hours' fruitless search convinced us that there was no possibility of getting the ponies across."

The glacier here called the "Rimo" is most certainly the Chong Kumdan. This point has been referred to Kermit Roosevelt, who agrees.

The party was forced to turn back and crossed the Depsang plains. Here they met a Yarkandi caravan which had attempted to take the Shyok route from the north, but had been stopped by the same glacier (*East of the Sun and West of the Moon*, pp. 59-61).

1926.—In early June the valley was reported dammed by two glaciers, the Chong Kumdan and probably the Kichik Kumdan. A lake had formed upstream of the former, and by August extended to beyond Yapchan or Gapshan, a distance of some six miles from the glacier. The depth of water in the Shyok river at the Saser Brangsa ford was 1 foot in June and 2 feet in early October some three weeks before the ice-barrier gave way.

The dam burst at the end of October.

1928.—During the summer the Chong Kumdan glacier was again reported to be blocking the Shyok valley, and it was expected that the barrier would give way during the period of high flood. Ludlow examined the glaciers early in August. He found the terminal ice-pinnacles of the Aktash glacier, except in one spot to be 200 yards or more from the Shyok; but he doubted whether the Aktash would ever completely block the Shyok, and form a lake upstream of it. He found no indication of such a lake in the past, and considered the Shyok bed sufficiently sandy and porous to allow drainage under the ice, as seems to have happened in 1905.

Ludlow found the Kichik Kumdan ice-pinnacles more than a hundred yards from the river bank, but remarked that the actual tongue nearly reached it. From his photographs it is evident that his belief that the glacier is retreating is well founded. It is also probable that the ice is diminishing in volume.

The Chong Kumdan completely blocked the Shyok river, and its snout had spread down the main valley for a distance of from 500—600 yards. The dam rose steeply for this distance from its tongue, and was covered with detritus. The lake up river of the Chong Kumdan dam extended above the Chip-chap confluence for a distance of $3\frac{1}{2}$ -4 miles, giving it a total length of from 10-12 miles. Its level was rising about $1\frac{1}{2}$ feet a day on August 1st and 2nd, though Ludlow considered this rise abnormal (*see* Ludlow's paper *The Shyok Dam* in 1928, *ante*). A good account with some interesting and instructive

photographs appeared in the *Times of India, Illustrated*, for October 14th and 21st, 1928.

SOME ASPECTS OF BIRD-LIFE IN KASHMIR.

HUGH WHISTLER.

KASHMIR is very rapidly becoming the playground of India in the sense that Switzerland has become the playground of Europe. I think, we are therefore entitled to consider that members of the Himalayan Club as a whole are likely to see more of Kashmir in the immediate future than of the rest of the Himalaya put together. Hence, while wishing the Avifauna to be represented in the inaugural number of our Journal, I feel that its aspects in Kashmir are perhaps the most suitable to dwell upon.

The subject of Kashmir Birds is a large one. I therefore, propose to divide the following notes into three sections. In the first I shall give a brief account of the connection between the avifauna of Kashmir and that of other parts of Asia ; in the second and third sections I shall endeavour to describe the more familiar birds of the Vale of Kashmir and of the Treaty Road to Leh. My hope is to interest the traveller who, while no professed ornithologist, is in sympathy with all aspects of Nature, and desires to link up what he sees with more general questions.

SECTION I.—THE ZOO-GEOGRAPHICAL POSITION OF KASHMIR.

It is perhaps a commonplace to remark that the first thing a traveller learns is the differences between countries. The new recruit in India, however unobservant, notices not only the new races, new customs, and new language of men, but the difference in trees and plants, birds and mammals, insects and other forms of life, compared with those of his English home, cannot fail to reach his notice. If he is ordinarily observant, he will further note that differences again exist between the species of the various parts of India he visits. Most people are content to leave it at that, but a proportion seek to enquire why there are these differences, and at once they are introduced to that absorbing question of Geographical Distribution.

Nature ignores political boundaries made by Man, though he in fixing them is influenced by Nature far more often than he realises. Nature works with the aid of climate, temperature and rainfall, vegetation and altitude, not only in the present but through the vast changes

of the past, and these factors influence the distribution of all living things on the earth's surface. Not only birds but all other Orders are affected, and a careful consideration of such distribution has enabled scientists to divide the surface of the earth into a number of zoo-geographical regions according to the presence or absence of different forms. To understand the position of Kashmir in this scheme it is necessary briefly to explain the zoo-geographical divisions of Asia.

The whole of Northern Asia belongs to the Palæarctic region, which extends also across the whole of Europe and includes a portion of north Africa. The southern boundary of the Palæarctic region in Asia runs roughly along the northern fringe of the Himalaya and through northern China so as to include the islands of Japan. The remainder of Asia lying south of the Palæarctic boundary is considered as a separate region embracing the rest of China, India, Burma, Ceylon, and the Malays. This region is entitled the *Indian* or *Oriental* region. It must be remembered that all the regions require to be subdivided still further to express the lesser differences in their Fauna and Flora, and also it must be appreciated that the boundaries both of regions and sub-regions are but seldom very clearly defined.

We must first of all fit the Himalaya into this scheme which divides Asia roughly across its middle by the boundary between the Palæarctic and Oriental regions. We will afterwards consider Kashmir with reference both to its place in the Himalaya and in connection with the Palæarctic and Oriental regions.

Now a very slight knowledge of Indian birds is sufficient to show that the birds of the Himalaya are quite different to those of the Plains. This is most easily seen in the north-west, where the plains run up close to the outer ranges without that netherland of broken foothills, *dûns* and *terais*, which serve to mask the differences between them. Comparatively few Englishmen know the country to the north of the Himalaya, but those who do will also appreciate the similar difference that at once is found between Himalayan birds and the birds of Turkistan and Tibet. The Himalaya in short constitute a zone lying between the highlands of Central Asia and the Plains of India, and faunistically divorced from either of them; for what I have stated from the point of view of the avifauna is true also of the other Natural Orders.

Remembering the position of the Himalaya as they straddle across the northern boundary of India, we then look at the mountain ranges which mask their two ends; for though we may expect a mountain

fauna to differ markedly from a neighbouring plains fauna, we must expect it to resemble the fauna of neighbouring mountain masses ; if not, the resemblances and differences will be the key to its place in any zoo-geographical system. The western end of the Himalaya breaks into a number of ranges running through Afghanistan and down the north-west frontier of India ; the eastern end gives place to the ranges which in northern Burma and Yunnan connect with China. It is unfortunate that political reasons have prevented any adequate exploration of either of these mountain groups lying at each end of the Himalaya. We know enough, however, about them to compare their avifauna roughly with that of the Himalaya, and it at once becomes evident, if this is done, that the Himalayan fauna soon ends to the west, but to the east extends with modifications into Yunnan, linking up fairly closely with the fauna of China.

To use the words of Colonel Meinertzhagen, in a recent most valuable paper on *Some Biological Problems of the Himalaya**, "one cannot refrain from regarding the afforested area of the Himalayas as a huge tongue of China stretching across northern India ;" and this explains the commonly accepted division of the Oriental region into three sub-regions, the Indian, the Malayan, and the Himalo-Chinese.

The Himalo-Chinese sub-division, according to this view, includes the afforested portion of the Himalaya ; starting in Kashmir with a mere strip of territory, it passes through Nepal and Bhutan, widens eastward in Northern Burma and stretches across China to the coast, and to the islands of Hainan and Formosa beyond. In this elongated triangle of territory we find a general agreement between the representation of genera and species, so that an ornithologist who had worked in southern China would, if transplanted to Kashmir, find himself with a general working knowledge of the birds he met with in his new sphere. In popular phrase, he would find the birds the same with a difference, many species having several sub-species running throughout the whole area from Kashmir to China.

So far as the Himalaya themselves are concerned, it is easy to understand the distribution of species and sub-species. In general terms we find that the birds, as regards species, are distributed in definite altitudinal zones. No very accurate definition of these zones has as yet been attempted for the Himalaya as a whole, but the division of the zones which I proposed in 1926 for that section of the outer

* *Ibis*, 1928, pp. 480-533.

Himalaya which lie in the Kangra district may be quoted as a general guide to the whole. My zones were as follows (*Ibis*, 1926, p. 525.) :—

Punjab Plain Zone	..	below 1,500 ft.
Foothill Zone	..	1,500 ft. to 4,000 ft.
Ban-oak Zone	..	4,000 ft. to 8,000 ft.
Kharshu-oak Zone	..	8,000 ft. to 11,000 ft. (tree-limit).
Alpine Zone	..	11,000 ft. upwards.

Allowing for local differences of temperature, rainfall and vegetation, it will be found that these zones of bird-life hold very true throughout the whole extent of the Himalaya ; but we must remember at the same time that the limits of these zones are not sharply defined ; one zone grades into another and the zones do not exhibit entirely different faunas. Indeed the American naturalist, Mr. Frank Chapman, who has studied very fully the zonal aspect of the avifauna of the Andes, emphasised this point by defining his zonal boundaries with altitudinal bands of 2,000 feet.

As regards sub-species, Himalayan birds exhibit a very definite division into eastern and western races, the division between these races occurring somewhere in Nepal as a rule. With Bhutan the distribution of races becomes more complicated, but luckily that lies beyond the scope of this paper.

If my meaning has been clearly expressed the reader will understand the zoo-geographical position of the Himalaya. It now remains to show how Kashmir fits in with that position. I will at once state my opinion that Kashmir cannot in any way be regarded as a zoo-geographical entity, whether we take Kashmir in its restricted sense or as including the whole of the territories of the Maharajah. The position is however clearer if we consider Kashmir in the latter wider sense, and I will, therefore, discuss it with the inclusion of the provinces of Jammu, Ladakh, Baltistan, Astor and Gilgit.

The Jammu plain is easily disposed of ; it is merely a small portion of the Indo-Gangetic plain which political boundaries and historical reasons have assigned to the sovereignty of the Maharajah, thereby divorcing it from its natural position in the Punjab. It is part of the transitional zone between the Indian sub-region of the Oriental region and the great Palæarctic desert which starts on the Atlantic coast of north Africa and reaches the heart of China.

From the Jammu plain rises the mass of the Pir Panjal which so far at least as its southern face is concerned is merely the prolongation westwards of the Himalo-Chinese sub-region which we have discussed above. It passes through Kashmir into the Murree Hills and Galis,

a mere strip of territory narrowing to its ultimate end. Kishtwar and Bhadarwah are probably included in it and possibly the mountains of the Kazi Nag, but it is noteworthy that this area is the least known and least worked of the whole of the Western Himalaya. Its position in the Oriental region is however certain.

For the moment it is easier to skip the intervening territories and pass across to Eastern Ladakh. As with the Pir Panjal, so with Eastern Ladakh, there can be no mistake; there we were in the Oriental region; in Eastern Ladakh we are in the Palæarctic, for it is nothing but a portion of Tibet divorced merely by political and historical chance, just as Jammu was cut off from the plains of the Punjab. However much scientists may differ as to the correct arrangement of zoo-geographical boundaries, all are agreed in treating the Tibetan area as part of the Palæarctic region. The older writers were accustomed to speak of Ladakh as Little Tibet, and that accurately expresses its position.

An extraordinarily interesting portion of the world is Tibet; it is, as Meinertzhagen elaborates, the only country where desert and arctic conditions coincide. It is part of the great Palæarctic desert, another arm of which we have already met on the southern boundary of Jammu; yet it is, as it were, an island remnant of the arctic conditions which the retreating glacial period has left at the Poles; for alpine conditions are arctic conditions. The Tibetan fauna is peculiar in that it largely consists of those alpine or arctic forms, hardy and robust by nature, but extremely sensitive to competition with other forms in the struggle for existence, which in the face of such competition have retreated to high altitudes and deserts. Both conditions coincide in Tibet, and its fauna is therefore highly peculiar, though closely connected with that Palæarctic region whence these fugitives have been driven. A patch of this peculiar Tibetan sub-region we are privileged to enjoy in Eastern Ladakh.

The rest of the territories of Kashmir cannot be spoken of in very positive terms; for they form an intermediate area which bridges the gulf between the Oriental region represented in the Pir Panjal and the Palæarctic region in Eastern Ladakh. But as this intermediate area is broken up by very definite natural boundaries, we find it falls very easily into certain appreciable sub-divisions.

The first of these and the most obvious is that elevated plain which we commonly speak of as the Vale of Kashmir. In this there is a considerable blending of the Oriental and Palæarctic avifauna. We have on the one hand breeding there in considerable abundance

a number of species, which breed nowhere else in the Oriental region, whether in the Indian or Himalo-Chinese sub-regions. This class includes several of the most characteristic birds of the Vale, such as the Bee-eater, the Roller, the Jackdaw, the Wryneck, and the Starling. Yet side by side with them, and equally common, are a number of purely Oriental forms, such as the Mynah, the House-crow, and the Yellow-vented Bulbul, or Oriental races of birds, like the Rufous-backed Shrike, the Golden Oriole or the Great Tit, which belong to species that have both Palæarctic and Oriental races. It has been suggested that Kashmir may prove to be related more closely to the Mediterranean sub-region than to any other,—one of its far-flung “islands” may I call it,—but in the present state of our knowledge it is very difficult to decide whether the avifauna of the Vale is more closely connected with the Oriental or the Palæarctic region.

The mountains that encircle the Vale contain a very different avifauna particularly in the afforested area of those slopes which are directed towards the Vale. The southern aspects and ranges of the Pir Panjal are, as we have seen, very clearly part of the Himalo-Chinese sub-region; yet the northern face of the Pir Panjal can only be classed with the rest of the ring of mountains which encircles the Vale. The avifauna of this encircling ring is so very definitely different to that of the enclosed plain, that a rise of only five hundred feet from the latter is sufficient to remove those most pronounced Palæarctic elements, which made us hesitate to assign a region to our Vale. While the avifauna of this ring of forests is superficially Himalayan, there are missing from it many species which are amongst the most characteristic of the true Himalayan forms—I need only mention the Verditer Flycatcher and the Black-headed Sibia as examples;—at the same time we find there birds like Hodgson’s Tree-Creeper and the Kashmir Nuthatch, which can only be considered as truly Palæarctic forms. We may conclude therefore that while the Vale marks the junction between Palæarctic and Oriental forms, so does its encircling ring of forests from 5,500 feet to 12,000 feet mark the junction of Palæarctic with definitely Himalo-Chinese forms.

Yet another junction remains to be effected, that between the Tibetan and the Himalo-Chinese forms, and this will be found in the vast stretches of alpine pasture which run above the tree-level on the afforested ranges and extend over the intermediate ranges. In Meinertzhagen’s graphic words, we may call it “a strip of upland grass country, alpine in flora, a wondrous rock-garden of exquisite

design and quality, and blessed with abundant moisture." In this zone we have a mixture of Himalayan and Tibetan birds with a few forms peculiar to itself, and it leads us naturally and gradually to the high uplands, intersected by the low hot valleys of Astor and Gilgit, which form the transition zone between the Himalo-Chinese avifauna and the non-Tibetan Palæarctic fauna of Western Central Asia.

SECTION II.—SOME FAMILIAR BIRDS OF THE KASHMIR VALE.

What a wonderful thrill there is to be on the Kashmir road ! Nine out of ten travellers to Kashmir start up that road in the hot weather, emancipated for a space from the burden of office and fleeing from the wearisome heat and languors of the plains. A jaded night in a hot and dusty train is followed by the usual wrangle with coolies and tents before one is at last settled into the car and started off on the first stage of the 200-mile journey to Srinagar. But a few miles and the plains are left behind and the road starts to climb steadily up to Murree before its long descent again down to the Jhelum river ; there on the Jhelum lies Kohala, the entrance of Kashmir, though its height is little different to that of Rawalpindi. The long miles pass, a never-ending vista of precipice and river, of hairbreadth curves and hanging forests, till at length the valley opens out and one passes round the last hill corner to find oneself at Baramula and the Happy Valley.

There are now only 34 miles remaining to Srinagar ; so we may order the driver to go slowly and give us opportunity to see the bird life by the road. For at Baramula we find ourselves at once amongst the typical birds of the Kashmir Vale. There is no difficulty about deciding what species will first demand an introduction even if they had not come some miles towards Rampur and Uri to press their claims. As we round the corner and see Baramula, we see at the same moment quantities of jackdaws and kites, for Baramula is one of the dirtiest of the dirty towns of Kashmir and feeding is good for the scavenger.

About the town wheel the kites on a never-ending patrol, now low above the houses with steady onward flight, now mounting in wide spirals to attain a loftier view. Backwards and forwards they go and their going is unending ; for as one bird ceases its beat and settles on a roof or in the branches of a chenar tree with a self-satisfied shake of its loose plumage, another starts forth on the unending quest. And now and again the kites of Baramula are shaken and thrown out in a whirling squealing mass as dice are thrown from a dice box ;

and the hand that shakes the main is the brown Kashmiri hand that pauses in its household task to throw some offal into the open. A tumult of wings and clutching talons, an agitated squealing, and one of the kites flies swiftly away with the coveted morsel in its talons, pursued by the indignant failures. Then peace falls again, save for the constant patrol. The sight is one that may be seen in any Indian bazaar but the point to remember is that this is not the familiar Pariah Kite (*Milvus migrans govinda*) of the plains, but the Larger or Black-eared Kite (*Milvus lineatus*), distinguished by its larger size and by the very conspicuous pale moon-shaped marking, visible on the under-surface of the wings in flight.

The jackdaws are everywhere in and about the town; in fact they occupy in Kashmir exactly the position of the house-crow in the plains with the difference that they exhibit a solid phlegmatic temperament more suitable to a Palæarctic species than the volatile impudence of the Oriental bird. Superficially, the Jackdaw (*Corvus monedula sæmmeringii*) and the House-crow (*Corvus splendens*) are somewhat alike and the indifferent confuse the one with the other; but the smaller size, the lesser extent of grey in the plumage, confined to a grey collar ending in a white moon on the sides of the neck, and the white eye easily distinguish the Jackdaw, while its musical note is very different to the vulgar caw of the House-crow.

The jackdaws are everywhere—they perch on the houses and walk sedately about the ground in pairs and parties searching for food of every kind; and most pleasing of all, they are visible up in the chenar trees, each pair sitting lovingly side by side on a bough near the entrance to the hole that contains the nest. Their numbers in Kashmir are very great and the morning and evening flight of the vast flocks which roost in and about Srinagar and feed far and wide in the fields of the valley is certainly one of the ornithological sights of the place.

At Baramula we shall also see the House-crow and its easy familiarity will bring it into notice, but it is confined in the Vale to the Jhelum Valley from Baramula to Srinagar; it is not very numerous, being obviously a recent immigrant from the plains following the trade-routes.

Another crow which we shall certainly see is the Jungle-crow (*Corvus coronoides intermedius*), though its proper place is in the forests on the hill-sides. No one who has camped in any of the nullahs can fail to know this fine glossy jet-black crow; a dozen or more join every camp, enlivening their noisy existence in the surrounding trees with

exciting raids round the kitchen tent. I think one of the most interesting points about this sturdy vagabond is its immense range ; for divided into many local races, it extends not only to Ceylon but right away to Australia.

But we need not pay much attention to these three crows at Baramula. At Nedou's Hotel we shall have ample opportunity to study them at our leisure and note their different characters as they perch all three on the railings behind our quarters.

The thirty-four miles of road from Baramula to Srinagar are lined on both sides with tall Lombardy poplars, planted in neat close regularity like the posts of a railing. Two birds are particularly noticeable in these poplars as the motor speeds along. The first is the Rufous-backed Shrike (*Lanius schach erythronotus*), of which a pair are found about every hundred yards, each with its well-defined territory. They are typical shrikes in appearance with the bull-head and longish tail of the genus, and as they sit upright on the lower branches of the poplars the black eye-band and creamy white underparts are very conspicuous in contrast. The nests are built against the poplar trunks in the crotch of the sprouting branches and the hoarse rough note of the owners is heard as the motor passes their home. Rather an interesting songster is this shrike, for his own low pleasant warble is diversified by excellent mimicry of the calls of other common birds, some of which he must have learnt in his winter quarters in the plains. He is a bold and strong bird and his dietary includes other small birds or their young. In fact I suspect that much of his food along the lines of poplars consists of the callow young of the house-sparrows whose nests are in almost every tree.

The House-sparrow (*Passer domesticus parkini*) is the second species which I promised we should notice along the road. I do not think there is any country in the world where this prolific species is more common than in Kashmir. Everywhere it swarms in the Vale and across the passes it is found at every little village and hamlet. In habits it is much the same as our English bird, but this Kashmir race may easily be recognized by its cleaner-looking brighter plumage with white cheeks and a brighter chestnut on the back. An interesting feature of this race also is that it is largely migratory (for in most of the world the house-sparrow is strictly a resident), and in winter we find it down in the Punjab and Sind ; were it not migratory it could never exist at the great altitudes beyond the passes where we find it in summer, chirping on the roofs of the highest villages in the world. The nests are everywhere in Kashmir, in the roofs of houses, in walls,

in holes, in the banks of the Jhelum and in trees ; all along the roadside the nests are in almost every poplar, the peculiar growth of the branches forming admirable niches for the large untidy lumps of straw and grass.

A familiar-looking bird that is sure to catch our eye on the fields along the road is Hume's Starling (*Sturnus vulgaris humii*), a bird that is only distinguished from our English starling through its slightly smaller size and a difference in the colours of the oily-looking gloss that makes an old starling such a resplendent figure. Starlings to my mind are always associated in all countries with pollarded willows, and the willow tree is so marked a feature of Kashmir scenery that I feel no surprise in the abundance of starlings. Little parties feed busily on the damp ground, all working away with the desperate hurry so characteristic of the species : the hinder birds keep on flying over the front ranks in fear lest they miss the spoils, and the shiny black bodies turn ceaselessly on the strong squat legs as the birds prosecute their endless search digging in amongst the roots of the grass for grubs and beetles. Now and again parties fly over ahead, fast and straight, bent on their destination with the same concentration of purpose. Here and there on the willows the pairs that have fixed on their nesting holes sit aloof for the time from their fellows, but even in courtship the restless flicking of the wings and the metallic reeling song of the cocks still betray the nervous hustling temperament of the bird which of all species seems in tune with modern civilization ; small wonder is there that the Starling is invading America, for surely the placid leisurely ways of Kashmir are alien to its soul and its place is with the armies of progress.

By the road runs the telegraph wire, so here rather than in Srinagar itself we had better mention its peculiar associations, for some birds seem to regard the wires and posts as erected for their convenience. Look out of the railway carriage all the way from Delhi to Rawalpindi, and you will see the black King-Crows and the little Green Bee-eaters perched at intervals the whole length of the wires, while a White-eyed Buzzard drones away his day on every fiftieth post. So here from Baramula to Srinagar you will see the Ring Doves (*Streptopelia decaocto*) perching uneasily along the wires, bird after bird, with the difference that their heavy bodies and broad tails do not seem to balance as comfortably as the slender figures of the plains. But Kashmir has also a Bee-eater for the wires and as we pass along we see the European Bee-eater (*Merops apiaster*) sitting in twos and threes along the wires, the slim body with the elongated pointed

tail and the long sharp beak allowing a perfection of balance hard to beat. The Bee-eaters love the wires which form an admirable perch on which to sit and watch for passing insects, and they keep on flying off to catch a passing bee darting into the air at all angles with a speed and mastery of flight which cannot be surpassed. This species of Bee-eater is not found elsewhere in the Himalayas nor in the plains of India, but its range lies westward to southern Spain and it is one of the peculiarly Palæarctic elements in the avifauna of Kashmir as is also the Roller (*Coracias garrula semenovi*), the large blue bird which also sits on the wires and on the telegraph posts. The Roller is closely related to the familiar Blue-Jay of the Indian Plains but may be recognized by having the whole of the under-surface blue, while the wings and tail are a more uniform deep blue lacking the paler bands which are so characteristic of the Indian bird and form that glory of surprise with which it breaks into flight. The Bee-eater is more abundant than the Roller for it is a social bird living in colonies which burrow nest-holes into banks and open hillsides. There is a colony of Bee-eaters on the Takht-i-Suliman and numbers frequent the lakes where they hawk dragon-flies off the reed-beds. The Rollers live only in pairs which seldom venture far from the encircling hills of the Valley and hence grow scarcer as we leave Baramula behind and the low outcrops of hills through which the road passes.

To me there is something particularly English about the bird-life of the European quarter of Srinagar. The call of the jackdaws on the roofs and about the trees is a very English sound as is also the song of the starlings singing from the chimney pots, their favourite vantage point in England. The multitude of swallows that fly over the Bund and the wagtails that live about its banks, the twitter of the goldfinches as they cluster on the fruits of the chenar trees, the call of the wryneck in the orchards, the kingfishers about all the waterways, the cheerful busy tits in the trees and the thrushes that hop on the lawns with side-bent heads listening for the worms,—all these are sights and sounds that recall his own countryside to the exile. Nor can he grudge the many stranger birds that creep into the picture to spoil the illusion, for one and all have some peculiar charm and I for one would not erase them from the picture.

Let us forget the dust and hurry of the road and look around us at the fresh species that we meet in Srinagar. We shall probably find one of them come to us in the verandah as we sit at tea before our walk. There is no more charming bird in Kashmir than the White-cheeked Bulbul (*Molpastes leucogenys*). He is such a sprightly fellow,

spruce and debonair as he turns from side to side uttering two or three little rippling notes that always strike me as amongst the most cheerful of bird-calls. His plumage is undistinguished save for the white cheeks and the yellow patch below the tail but he can be recognised at any distance by the crest, a long soft pointed crest which cocks forward with a graceful curve over the beak so as to form a "fool's cap" for the cheerful jestor that he is. These Bulbuls pair for life and a very pleasant affectionate union they form, always together, always calling to each other, and in Kashmir they are very particularly the friend of man. Sit in the verandah and they will come to tea with you (and probably nest on the rolled-up chick so as to be handier for the meal), hopping on the table and picking at the cakes. Picnic at Shalimar and they join you on the grass: live in a house-boat and they will come in to call. Yes, the journey to Kashmir would be worth while to meet this Bulbul alone.

One of the chief characteristics of Srinagar is the expanse of green turf everywhere, and two birds are always connected in my mind with this turf. They are the Hoopoe and Tickell's Thrush.

Everybody knows the Hoopoe (*Upupa epops*): it is so common and so striking that the newest and most unobservant of new-comers must perforce ask its name. Cinnamon-brown and black and white blend in the plumage and harmonize strangely with the somewhat awkward shape as the bird is seen feeding on the grass. It has a long thin curved beak with which to probe the roots of the grass for grubs. Its legs are short and as it feeds it seems very intent on the business. Seen thus it is not particularly remarkable. But as you walk by and the Hoopoe flutters up to settle and go on feeding a little way off, its strange beauty is at once engraved in the memory. The broad rounded wings and the expanded tail are a banded vision of black and white and the flight suggests that of a large and erratic butterfly; then the bird settles and for an instant the crest opens, a glorious fan-shaped crest covering the whole crown, fluted as a fan in the hand of a beauty of Seville. The crest closes again and once more the Hoopoe is busily feeding, its special beauty hidden.

The Hoopoe is a very widely-distributed bird and is common in all those countries where the beginnings of civilization are to be found. It is no wonder therefore that its strange beauty and wonderful crest have always caught the notice and imagination of man, while its easily imitated simple call—a rather solemn *Hoo-hoo-hoo*—has given it an onomatopœic name in all the important languages. Realistic portraits of the Hoopoe have been found in mural paintings both of

ancient Egypt and of Crete and from that time onwards mention of the bird runs through literature and legend to the present day. In western legend the Hoopoe is most familiar as the shape assumed by Tereus, King of Crete, for his punishment ; while Mahomedan countries regard the bird as the favourite and confidante of Solomon whose magnificence dowered its crown. The most prominent attribute of the bird in folklore and literature is its use in magical and serious medical prescriptions. Its use is recommended by various authors from Egyptian days down to the eighteenth century, most frequently in connection with visions or the power of memory. In Kashmiri folklore a love-philtre is made from the ashes of a Hoopoe which has been buried alive for forty days.

Tickell's Thrush (*Turdus unicolor*) replaces the Song-Thrush on a Srinagar lawn but it has the same quiet unobtrusive manner and the same habits. It hops about on the ground in the garden, three or four quick hops and then a halt to survey the possibilities of the spot ; if disturbed it hops quickly away through the bushes or flies up into a tree with the same direct flight, and like the English bird it is a beautiful songster, perching high in a tree and pouring out its heart to the pleasure of the worldlings below. Honesty, however, compels me to admit that its song is not quite so rich and varied as that of either the Song-Thrush or Blackbird, with both of which it has been compared.

Along the Bund we are certain to meet with two very familiar species, the Swallow and Hodgson's Pied Wagtail.

The Swallow (*Hirundo rustica*) is the same form as that of Europe ; it is surprisingly abundant as a summer visitor to the Vale of Kashmir and also surprisingly tame. Although it is found anywhere in the Valley nesting in the village houses and feeding over the fields and marshes, where it enhances the beauty of the lotus-beds by settling on the seed-pods and stalks, I always connect it in memory more particularly with the Bund and there perhaps with the Post Office. Numbers settle on the electric light wires and on the verandah beams with complete indifference to the busy crowds calling at the offices below, and they allow one to stand and study the fresh beauty of their form and colour without bothering to fly away. Many nests are built inside the Post Office and the young always seem to be successfully reared in spite of the closing of the office for hours at a time. The Kashmiris are kind and tolerant of birds and rather than break down the nests in their buildings place little shelves below them to save the floor from the mess. In the autumn, the flocks of migrating swallows

are a great feature of the telegraph wires all down the road to Rawalpindi.

Hodgson's Pied Wagtail (*Motacilla alboides*) greatly resembles and is closely allied to the English bird. It is found through Kashmir and Ladakh breeding under the stones of all the little islands on the rivers up to high elevations, but I mention it here as in Srinagar it is such a feature of house-boat life. Many a visitor has gained a deal of quiet pleasure from the presence of a pair of these birds whose nest has been built in a niche in the boat ; there is something very attractive about the clean black and white plumage and the swaying of the long tail as the birds run up and down the deck and roof. Long ago I read that the wagtail was one of the smallest birds that walks and runs as opposed to hopping and I am always trying to find a smaller, but without success.

Space is short or I should like to mention numbers of other birds which are common and likely to be noticed in Kashmir. The Great Tit (*Parus major cashmirensis*) is interesting as an example of geographical variation ; in voice and habits and nesting it closely resembles the English bird but in place of the bright greens and yellows of that form its colour is delicate french-grey and pearl-grey. The Goldfinch (*Carduelis caniceps*) similarly closely resembles the English form but lacks the black cowl on the head behind the crimson mask. While the Mynah (*Acridotheres tristis*), the Golden Oriole (*Oriolus Oriolus Kundoo*) and the Paradise Flycatcher (*Terpsiphone paradisi*) will attract notice the more that they are so well known in the plains of India.

But space is precious and we must visit the Dal Lake ; I will only warn the visitor to look out for two particular birds as he climbs the Takht-i-Suliman to admire the famous view over the Valley. The commonest bird on the Takht is Stewart's Bunting (*Emberiza Stewarti*), a small brown bird with white outer feathers in the tail which flash at intervals as it hops about on the hillside or flies from rock to rock ; the male has a greyish-white crown and a chestnut gorget on the breast and a loud wheezy song which he sings from the top of a rock. The other bird to notice there is the Blue Rock-Thrush (*Monticola solitaria pandoo*), a dull blue bird which perches on the rocks and is very difficult to study owing to its furtive shyness. The cock, however, has rather an attractive breeding-song uttered while the bird flies in a parabola above the hillside.

The Dal Lake is a most delightful spot for the student of bird-life to visit in a shikara ; many birds of very distinct personality are

common there and they are all easy to observe as they are accustomed to the numerous boats which constantly pass along the water-ways.

The first bird that we shall see after passing through the Dal Darwaza is certainly the Kingfisher (*Alcedo atthis pallasii*), the Central Asiatic form of the common European bird from which it differs only in minor details of size and tint. Nowhere have I ever seen the kingfisher so common as in Kashmir; it perches on the willows and reeds with its large dark eyes intently watching the water below until at last it dives headlong at some passing fish or aquatic larva. As the boat approaches it flies off along the channels low and swiftly over the water, uttering its sharp petulant note as if in disapproval of the interruption.

Another bird which we shall make the acquaintance of at the first reed-bed is the Great Reed-Warbler (*Acrocephalus stentoreus brunnescens*), a dull brown bird little bigger than a sparrow. It climbs about the reed-stems from top to bottom, now picking food from the surface of the water, now venturing for a moment into the sunlight at the top. It scarcely leaves the reed-beds save to visit the closest of the willows and we shall not find it too easy to see. But all must know it by ear whether they wish or no: for it is the author of the discordant creaky clamour which surrounds the Kashmir jheels as with a mantle—*Kecky-kecky-kecky, prit-prit-pritik*—repeated again and again with every possible variation of discordance. Numbers of pairs live in every reed-bed, building deep cup-nests suspended between the reed-stems; so deep are the nests that the eggs do not roll out, however much the reeds are swayed by the wind.

The Water-hen (*Gallinula chloropus*) and the Little Grebe (*Podiceps ruficollis capensis*) we shall also meet at once before Gagribal is passed. The former is careless of observation, swimming in the open channel and merely entering the edge of the reeds as the boat approaches, while its sooty black chicks also swim and feed in the open. But the Little Grebe is more shy and dives without allowing us to make its close acquaintance.

The most interesting bird that we shall meet is the Little Bittern (*Ixobrychus minutus*), a miniature heron with long pointed beak and long-toed legs. The plumage is streaked with warm russet shades to match the reed-stems and the bird in unconscious knowledge of its protective colouration stands motionless at the edge of the water as we pass. There are nests in all the reed-beds, rough cups of trodden reeds, which hold five or six dull white eggs. Standing motionless by the reeds the Little Bittern avoids the observation of most of the passing

boats, but all are familiar with the sight of this species on the wing flying quickly along with the head bunched back on the shoulders and the legs held stiffly out behind.

Before we reach the more open waters of the lake we are certain to meet with Hodgson's Yellow-headed Wagtail (*Motacilla citreola calcaratus*) on the floating gardens, where it nests amongst the herbage and feeds about the edges of the gardens and on the lotus plants. The males are easily recognized by their brilliant yellow head and breast contrasting sharply with the jet black back. In character they are rather dull and stupid birds to my mind and their chief interest lies in their adaptability to altitude. Vast numbers breed in the hot steamy plain of Kashnir, while equal numbers are found in the bracing river-beds and marshes up to 13,000 feet across the snowy ranges.

The main extent of the lake will introduce us to two characteristic birds. The first is the Pheasant-tailed Jacana (*Hydrophasianus chirurgus*) that lives amongst the lotus, and whose form is familiar to everyone through Chinese paintings. It is a remarkable bird from several points of view. The chief point lies in the wonderful adaptation of the feet to its habitat, the immensely long toes enabling the bird to walk freely over the weeds and plants that fill the waters of the lakes. The bend of the wing is armed with a horny spur and the first and fourth wing-quills end in curious elongated filaments of which the meaning is unknown. There is something very bizarre about this bird with its huge feet and white pheasant-like tail and it seems a fitting foil to the wonderful beauty of the lotus blooms in their tangled home of foliage. Above the lotus and the jacana fly the Whiskered Terns (*Chlidonias leucopareia indica*) in great numbers, wheeling backwards and forwards with an unceasing beat that grows tiresome in its monotony, their harsh creaking notes sounding across the placid waters to some distance. Both Tern and Jacana nest on the water-weeds; the Terns build a bulky nest of weeds visible some distance away with their spotted eggs or delicately-coloured downy chicks. The Jacana's nest is so slight that it scarcely serves to hold the four peg-top-shaped olive-brown eggs, and they seem almost to rest on the water, which indeed must keep them continually moist. And so I leave the Happy Valley, my mind's eye filled with that ceaseless patrol of the Terns which is one of its most characteristic memories.

SECTION III.—SOME FAMILIAR BIRDS ON THE TREATY ROAD TO LEH.

It is not always a pleasant business crossing the Zoji La from Kashmir into Baltistan and Ladakh. A very early rise may be

necessary in the cold darkness before the dawn : the ascent is steep and troublesome for the top of the pass is over 11,000 feet and in all probability an icy tearing wind blows straight in our faces ; and there is a strange reluctance to leave the pleasant forests and verdure of the Sind valley in spite of eager anticipations of the very different land ahead.

The summit of the pass is usually very empty of bird-life and my chief memory of it is the familiar call of the Cuckoo (*Cuculus canorus*), which echoed round the barren snow-clad hills. Somehow the cuckoo always seems so associated with trees and pleasant sunny spaces that it seems out of place perching on rocks in the desolation of high altitudes. Yet it is found quite normally on the higher slopes from 10,000 to 14,000 feet and breeds there, laying in the nests of pipits and rubythroats.

However, one has not far to go from the summit of the pass before birds gradually appear and grow commoner. Before Machhoi one is certain to meet two species which may be considered very typical of the Treaty Road. The first will be Stoliczka's Mountain-Finch (*Montifringilla nemoricola altaica*), a dull brown bird the size of a sparrow. Except when breeding, these birds collect in great flocks which feed in patches of cultivation about the hillsides and fly uneasily backwards and forwards with a swinging characteristic flight. Their courtship is rather pretty when the males posture before the females with the wings stretched up above the head. The nest is exceedingly difficult to find as it is placed under stones on steep hillsides, and the eggs are pure white of a type very unusual in the family of finches. The second species is even more characteristic of the Treaty Road : in fact it of all birds will ever spring to my mind as typical of the barren valleys and stony plateaux over which the road runs. The Black Redstart (*Phænicurus ochrurus phænicuroides*) may be seen everywhere along the road to Leh. It perches on the rough stone walls between the little fields and on the Mani walls and chortens ; it sits on the boulders and rocks of the hillsides, flying down at intervals to pick an insect from the ground ; and all the time at intervals of a minute or two it gives the little nervous shiver to the tail, which distinguishes it from every other bird in Ladakh and Baltistan. The adult male is rather a handsome fellow, blackish with chestnut underparts below the breast, but in their first year the cocks breed in a plumage indistinguishable from the females, dull brown with an orange rufous tail. The nests are solid cups of grass and wool placed deep in amongst the stones of a wall, and the eggs are of a very delicate shade of pale blue, and very rarely white.

It is not, however, until we reach the little cultivated plain about the hamlet of Matayan that bird-life becomes abundant, and there we find several birds which will be familiar enough by the time Leh is reached. I suppose the pride of place belongs to the Tibetan Raven (*Corvus corax tibetanus*), which though never abundant is always certain to be seen about the villages along the road. Its size alone distinguishes it from the Carrion-Crow (*Corvus corone orientalis*), which is the other black crow found in pairs along the road. The Carrion-Crow, however, requires trees in which to nest, but the Raven builds its bulky nest in holes and on ledges of the rough clay cliffs which are such a feature of Ladakh, and as a rule only visits the villages to feed : and a fine sight these birds are as they stalk sedately about. At Dras a pair frequented our camp and picked up the scraps that we threw to them from the tents. The male was much the bolder, and he would come to within five or six yards of the tent-door, approaching with clumsy loping hops a few at a time, with a halt to eye us warily ; then the coveted morsel was gained, he flew off as if the devil were after him.

Curiously enough in Ladakh, the two Choughs are not nearly such scavengers as I found them in Lahul. In Lahul the Alpine Chough in particular was remarkable for its boldness. There, as the naturalist Stoliczka recorded fifty years ago, it feeds freely round the tents and villages, a very pleasant beautiful bird to watch. But in Ladakh both species are rather shy and keep to the mountain-sides and fields, where they are common enough. The Red-billed Chough (*Pyrrhocorax pyrrhocorax*) and the Yellow-billed or Alpine Chough (*P. graculus*) are very beautiful birds, their coloured bills and legs supplying the needful foil to set off the wonderful glossy black of the plumage. While their graceful shape and flight and pleasant calls all contribute to make them, to my mind, among the most attractive birds of a barren region, where all life is welcome to break the monotony. Various sportsmen have remarked to me after their shooting trips that it is curious how the two species are distributed in different valleys, one species in one valley, the other in another, but in my experience this is not correct. I have found no difference in their distribution, except perhaps that the Alpine Chough tends to frequent a higher zone, and both species may even be found consorting together in a joint flock.

At Matayan we shall meet two species of lark with which in due course we shall become familiar. The Kashmir Skylark (*Alauda gulgula guttata*) indeed, should be already well known, for it is common

in the Vale of Kashmir and at Sonamarg, but the Short-toed Lark (*Calandrella tibetana*) will be met for the first time here. The habits of these two species are rather different. The Skylark is essentially a bird of cultivation nesting in the barley-fields about the villages ; around Leh it is particularly common, and its song as it mounts in spirals in the air will recall the song of Shelley's bird. The smaller Short-toed Lark, however, prefers barren stony wastes, where its tiny nest is placed beneath the shelter of a thistle or amongst the stones where it is exceedingly difficult to find.

Near Matayan we meet for the first time with the Ladakh Thorn (*Hippophæ rhamnoides*) whose sparse leaves and hard spiky branches form those little patches of cover in the river-beds which loom so large in an almost treeless land. How my knees and legs have suffered as I have tramped through these patches of thorn, intent on discovering whatever they might hold ! and very interesting are the two species which we shall find at Matayan in their cover. The most noticeable bird is the Chiffchaff (*Phylloscopus collybita sindianus*), a sub-species of the familiar English bird. It is a tiny brown bird with paler under-parts and as it creeps about the thorns, it sings its cheerful little song, *chiff-chaff, chiff-chaff, chiff-chaff*, announcing its identity for one and all to learn. When I first passed by Matayan the valley was still wreathed in melting snow, but the chiffchaffs were singing in the thorns, waiting for the coming of the summer warmth and the bursting of the leaves to provide cover for their nests. These are little domed affairs of grass, well-lined with feathers ; the eggs are four in number, white and delicate with rusty brown-red spots.

It is very interesting in Ladakh to notice how the birds arrive on their breeding grounds and wait there before they are ready to nest, and often indeed until the place is fit for nesting. I have seen Common Sand-pipers flying and piping about a snow and ice-bound stream at the spot where they would later nest on an island still completely hidden. And everywhere in June the Rose-finches sit dully about on the patches of briar a month before they are ready to nest in them. Another interesting point is the way in which the temperature and altitude of the valleys affect the breeding of individuals of the same species, quickening or retarding them. While the Chiffchaffs of Matayan between 10,000 and 11,000 feet are singing hopefully amongst the snow, their relatives at 9,000 about Kargil are getting on with the practical work of nest building. There must be a difference of a month or six weeks in the breeding seasons of birds in different localities in Ladakh.

In the thorn bushes at Matayan we shall meet also the Bluethroat (*Cyanosylvia svecica abbotti*). It is a difficult bird to observe as it runs on the ground amongst the thorns or dives headlong into the growing barley, noticeable as it goes only for the patch of chestnut in the base of the tail. But the males come up at intervals to perch on the top of the thorns or even on a willow-bough to sing their pretty little song, and then if we are cautious and use our glasses we shall see the splendid shining blue of the throat and mark the spot of red or glistening white that in the centre sets it off. The Bluethroat is more or less related to our English robin and nightingale, and the eggs rather recall those of the latter bird in type though they are greener in colour. The nest is a cup placed on the ground in situations which resemble those of the nightingale.

Pandras is another landmark on the road : for below the tiny village on the plateau there is a little clump of trees enclosed in a rough stone wall, the forerunner of the walled camping-grounds of Ladakh, whose welcome shades invite the weary traveller. And this little clump of trees holds year by year a magpie's nest, forerunner of the nests which are built in all the camping-grounds and round every village. It seems curious somehow to meet the magpie in Ladakh perching on the rocks, and it is far tamer than in Europe, nesting near the houses and perching often on the roofs. In the field it would be taken for the European bird, but it is actually a different race (*Pica pica bactriana*) distinguished on examination by the larger size and by the greater amount of white in the wings and on the rump.

Further down the road the Common Rose-finch (*Carpodacus erythrinus roseatus*) first becomes common at Dras where we begin to find the patches of briar which form the favourite cover for its nest. The male rose-finch is a very lovely bird in summer with his brilliant crimson plumage far removed from the dull streaked modesty of the hen. I suppose some people would claim that the colour of the males was protective and designed to escape notice amongst the blossoms of the briars, but I think myself that it is due merely to some natural law, the various shades of red and pink being very common amongst all the smaller birds found at very high elevations. That the law exists is clear enough, but I cannot guess its reason. Dull in character and poorly dowered in brains, the Rose-finch is yet a distinct asset amongst the incidents of travel in the barren uplands : for besides providing vivid splashes of colour, the males enliven the silence with their persistent song—*We'll bewitch you, Eat you, meet you, Pleased to meet you*—in a loud canary-like whistle along the hillsides, with its

welcome or its warning to every passer-by. The eggs too are very striking, a wonderful blue in colour, splashed with spots of ink and brown.

One of the fascinations of the trade-road is the way in which it is always leading on to something new. Kargil stands in my memory as the home of that delicate-looking black and white bird, the Siberian Wheatear (*Oenanthe pleschanka pleschanka*) which sings from the telegraph wires on the otherwise almost lifeless plateau above the town. At Mulbekh we expect the Blue Hill-Pigeon (*Columba rupestris turkestanica*), distinguished from the common Blue Rock-Dove (*C. livia neglecta*) of the Himalaya by its paler underparts and the white patch in its tail. And on the ascent of the Namika La between 11,000 and 12,000 feet, we first find a very noticeable bird which we shall meet again and again. Adam's Mountain-finch (*Montifringilla nivicola adamsi*) is the Himalayan representative of the snow-finch which is so familiar to those who visit the Swiss hotels for winter sports as the little brown and white bird to which they throw out scraps. It belongs to the same genus as Stoliczka's Mountain-finch which we saw on the descent from the Zoji La, but it is altogether a more interesting bird, tamer, and with more individuality. In life it strikes one much more as a lark than a finch; it feeds perpetually on the ground and the long wings and full tail, both variegated with white, give it a very lark-like flight. The nest with its white eggs, hidden deep in the ground under a stone or wall, is impossible to find by searching, but it is often revealed by the tameness of the birds who fly in and out with little regard for passers-by, especially when the young are being fed.

No memories of Ladakh would be complete without mention of the Gold-fronted Serin (*Serinus pusillus*), one of the most numerous and most charming species to be met there. It is, however, one of the last birds that the traveller will probably learn to know as its tiny size and dingy colouring make it somewhat elusive. The name is due to the patch of golden scarlet on the forehead, brilliant and distinctive when the bird is handled or carefully scanned through glasses, but barely noticeable in the field. According to season it is found in large flocks or in twos and threes, feeding on the ground amongst the stones by the wayside, just a nondescript little sooty bird with a pleasant twittering note, of which at first one takes no particular notice. But learn the delicate shades of the plumage and distinguish the little gold front, and you will make an acquaintance that you are always glad to

see—it is so delicate and dainty, such a contrast to the stern ruggedness of Nature's other works around.

By now we have made acquaintance with all the most characteristic birds of the road : it is not a long list, for bird-life is scarce in species in these desert uplands. But in addition there are several species that we are bound to meet. In the wider and more cultivated river-beds, Hodgson's Yellow-headed Wagtail (*Motacilla citreola calcarata*) is common and conspicuous as the cocks, with their lovely contrast of black and yellow, sit lumpily on a bush or stone in the neighbourhood of the nest. In the barley-fields one hears the curious clicking song of the Large-billed Warbler (*Tribura major*), a little-known bird related to the Grasshopper Warbler of the English fens and heaths. If the sound is followed up, it introduces a dull little brown bird sitting on a bush or tree, a nondescript to look at. At a near approach it dives into the undergrowth and will be flushed again with difficulty. The hen is very rarely ever seen. If the nest is found, a cup of grass on the ground in the midst of tangled foliage, one may see the foliage shiver as if at the passage of a rat, when the hen bird runs off her eggs, but she is almost impossible to secure ; and there is hardly a specimen in the museums of the world.

Here and there on the hillsides one hears the song of Hume's Whitethroat (*Sylvia althea*), and finds its nest and eggs in the briar bushes ; while along the road one meets with the Meadow-Bunting (*Emberiza cia stracheyi*) shambling along the ground with an occasional uneasy flick of its white-edged tail. It is a very typical bunting and easily identified by the black lines on the head. The eggs have the curious pen-lines and scrolls and dashes, so familiar in England on the eggs of the Yellowhammer.

Black-looking Swifts (*Apus apus pekinensis*) tear and scream about the face of beetling cliffs in which they breed in colonies ; and along these same cliff-faces, and indeed about any rocky bank above the rivers the brown Crag-martins (*Riparia rupestris*) beat endlessly on patrol, mounting in the eddies that ascend the broken crannies of the rock, and circling round dive down to mount afresh.

The villages swarm with Sparrows (*Passer domesticus parkini*), of the same species that is such a familiar pest in the Vale of Kashmir. And at every camping-ground a pair of Hoopoes (*Upupa epops epops*) feed busily on the level spaces ; if watched they may be seen to fly off with grubs to the nest, hidden deep in the hollows of an aged poplar.

Up in Ladakh, birds of prey are strangely scarce. An occasional pair of Hobbies (*Falco subbuteo*) breed in the villages and camping

grounds, using the old nest of a carrion-crow or magpie. Occasionally a Griffon Vulture (*Gyps himalayensis*) or the grander Lämmergayer (*Gypaëtus barbatus*) beats along the hillsides or wheels far overhead hoping to find a dying goat or pony ; and on the higher ranges one is privileged at times to see the soaring of the magnificent Golden Eagle (*Aquila chrysaëtus daphanæ*) or its tearing stoop at a hapless marmot which has strayed too far from its burrow. But the only species which is really common is the Kestrel (*Falco tinnunculus*) which breeds in the cliffs along the valleys. Here, as elsewhere, it feeds on insects and lizards and small mammals, but I think in Kashmir and Ladakh it kills far more small birds than is usual in Europe and in the plains of India. Food is scarce and hunting difficult in this mountain desert, so the Kestrel learns to carry off lark and mountain-finch, dashing at them with the fire of the bolder falcons.

I remember how once on the march I saw a kestrel fly swiftly over some fallow fields and take a mountain-finch off the ground, flying on with it held in its claws. As it passed, some sixty or seventy other mountain-finches rose from the ground and mobbed the kestrel. Away went the kestrel clinging to its booty with the cloud of small birds in pursuit. I watched them into the distance across the valley growing dimmer and dimmer, until suddenly they passed from the shadow of the mountain into the early morning sunlight which poured between two peaks. And in the beams of light the cloud of mountain-finches was lit up and became a kaleidoscope of dancing motes, rising and falling in perpetual motion. They crossed into shadow and all had vanished save the memory.

BOTANICAL EXPLORATION IN THE MISHMI HILLS.

F. KINGDON WARD.

PROBABLY every generation has boasted to its successors that it has left them no more worlds to conquer. And yet there never were more explorers than there are to-day. The truth is that the geographical outlook, like everything else, has changed with the times. No more worlds to conquer ! Rather are there new worlds for old, and explorers need never despair that the romance of their calling is dead. The paradox of exploration is that as the field narrows, the objects in the field expand to infinity. If, then, the pioneer has had his day, for the specialist it is only the breaking of the dawn.

The Mishmi Hills are not new ground to the pioneer explorer, nor to the Survey of India, who mapped most of the unadministered trans-frontier territory on the quarter-inch scale in 1911-13.* But to the botanist they are virgin soil. Except for Griffith who nearly a century ago visited Sadiya and travelled thence a short distance up the Lohit valley to the foot of the hills, no botanist has ever been into the country. One could safely say of course that the lower hills would be covered with sub-tropical evergreen rain-forest which would bear a general resemblance to the forests of the sub-Himalayan tract from Sikkim eastwards, or to that of the Khasia and Naga Hills south of the Brahmaputra. But apart from the type of vegetation, what of the species composing it? One might even predict the types of vegetation likely to be met with above 7,000 feet—as temperate rain-forest, rhododendron forest, conifer forest, and, ascending above the tree-line, scrub and Alpine meadow. But it would be quite impossible to forecast what species would be found above 7,000 feet, or even to say what are the affinities of the flora, whether predominantly Himalayan or Burmese, or Chinese, or even Tibetan.

Thus the quest has a twofold interest,—the obvious one of discovering new species, and the more exotic one of finding old plants in new places, with a view to working out distribution, the affinities of the flora, and the probable lines of migration.

Nor is this the end, but rather a means to an end. It was not chance which took us to the Mishmi Hills. For some years I have been botanizing on the North-east Frontier of India and on the trans-frontier ranges in Tibet and China which surround the back-door to India, always in the hope of throwing light on a certain purely academic problem, which may be stated thus:

What happens to the Great Himalayan range after the Dihang-Tsangpo has drilled a passage through it, to form one of the greatest gorges in the world? Does it, like the river, turn round on itself and trend, if not west, at any rate south? Or does it continue in a general easterly direction?

Geographers and geologists have tried to solve that problem, the former by plotting the lines of highest peaks, the latter by determining the sequence of the rocks, their age, and strike. But it is possible that the botanist also will eventually have something to say, which will help to unfold the history of a feature unique on the earth's

* The Delei valley is shown on Survey of India map 91-D, scale 1 inch=4 miles.

surface—a series of big rivers converging from widely-separated sources, flowing at different levels along closed parallel lines, in deep gorges, and after two hundred miles, separating widely again. That is the feature which we find east of the Tsangpo, and which has either turned the Himalayan axis or smothered it. Thus it was that, the permission of Government having been obtained, a trip into the Mishmi Hills was only the last of a sequence of expeditions to penetrate, from every possible angle, the mountain barrier between the plains of India and the Sino-Tibetan tablelands, from Sikkim to Yunnan.

In 1926 I had my first experience of the Mishmi Hills, travelling from Burma to Assam by the route Myitkyina—Putao (Fort Hertz)—Nam Tamai—Seinghku—over the Diphuk La or Talok Pass (14,280 ft.) to the Lohit just below Rima; thence down the Lohit to Sadiya. In the course of this journey I was able to extend our botanical knowledge of these mountains, and amongst several unexpected discoveries, apart from many new species, I discovered plants hitherto known only from Sikkim, as far east as the sources of the Irrawaddy (e.g., *Primula Wattii*), and others hitherto known only from Yunnan, as far west as the Irrawaddy-Brahmaputra (Lohit) divide (e.g., *Primula Agleniana*).

This 1926 journey paved the way for my Mishmi Hills expedition of 1928, which was financed by the Percy Sladen Memorial Fund, and privately. I had seen that the Lohit valley, where the river flows south to Minzong, some miles below Rima, was filled with pine-forest (*P. Khasya*), instead of the usual Indo-Malayan jungle; and this though the general altitude of the valley floor is only 3,000 to 4,000 feet. From Rima northwards, indeed, the climate is so dry that no trees at all grow at the bottom of the gorge. Further down-stream the pressure of the Indo-Malayan jungle gradually makes itself felt, so that even before the Lohit swings round to the west to reach the plain of Assam, pines are becoming rarer, and broad-leaved trees more common; and for the last fifty miles of its course in the mountains, its valley is filled with typical Indo-Malayan jungle comparable to that of the sub-Himalayan tract generally.

Before the Lohit reaches the plains, however, another stream, the Delei, joins it from the north; and I argued that, just as by travelling northwards up the main valley, one soon entered drier country, covered first with pine-woods, and then still further north with xerophytic scrub, so too by following up the Delei valley one ought to reach the pine-country. The mouth of the Delei is only five

marches from Denning, an outpost at the foot of the Mishmi Hills, 45 miles from Sadiya, and connected with it by a dry-weather motor-road ; and the valley is thickly populated. It seemed therefore an ideal route into the pine-country.

Lieut. Hardcastle and a surveyor had been up the Delei valley in 1912, and had mapped it to its head. Unfortunately in his report he had said nothing about the vegetation, or if he had, it was suppressed in the general report of the survey operations, which was unfortunate, because a bare statement such as "the valley is filled with dense evergreen forests of broad-leaved trees, with conifers above 7,000 feet, and grows narrower towards its head" would have told the naturalist a great deal.

Hardcastle was no longer available, and thus the one man who might have given me valuable information could not be traced ; so I had to gamble on two things, namely, that the upper Delei valley, like the Lohit, was pine-clad, and that the head of the valley was ice-worn, and widened out into more or less of an amphitheatre, just as the Seinghku valley did. This hope was not unreasonable, for the mountains at the head of the Seinghku valley are not much higher than those at the head of the Delei, and all these spurs are in contact with the same high snowy ranges to the north.

If my surmise was correct, we ought to have no difficulty in reaching the head of the valley, and getting in touch with the main stream of the Himalayan Alpine flora ; if it was not correct, there might be difficulties. At the end of February 1928, my companion, Mr. H. M. Clutterbuck, and I left Sadiya for the Lohit valley ; we got back to Sadiya on November 2, having been eight months in the Mishmi Hills. During this time we collected many hundreds of species, and although it is impossible to give more than general conclusions, based on work in the field, until the collection has been carefully worked out, the results arrived at may be briefly stated thus :

(i) The Delei river is a small side-stream which does not rise on the southern flank of the main range, but on a spur of the main range.

(ii) The valley has never been glaciated ; it is entirely water-worn. The head of the valley is not an open cirque, but grows narrow and deeper, the river flowing in a forested gorge almost from its source.

(iii) The lower part of the valley, up to the 4,000-foot contour at least, is filled with Indo-Malayan jungle ; the middle and upper forest is composed largely of trees commonly met with on the southern flanks of the Himalaya from Nepal eastwards.

(iv) The mountains over 15,000 feet high are rich in Alpines, some of which are found in the Himalaya to the west, and others in the mountains of far Upper Burma and Yunnan to the east, but always south of a line drawn roughly through the high peaks of the Himalaya and prolonged eastwards in the same general direction. Many of the Alpine and sub-Alpine plants collected are, however, new species and are probably endemic in the Mishmi Hills (*i.e.*, not found outside a restricted area).

(v) At the bottom of the valley, in the river-bed, the rocks are slates and schists, tilted on edge, with a general strike which appears to be north; possibly however the strike is north-west—south-east. On the higher ranges the rocks are composed of granite and schist, giving rise to very tenacious soils containing a considerable proportion of clay. There was no limestone.

The types of vegetation met with are similar to those encountered on the south flank of the Himalaya and throughout the wet zone to the east, from the Dihang gorge to the Salween. They may be tabulated as follows:—

2,000-6,000 feet.—Indo-Malayan jungle and sub-tropical forest, predominantly evergreen. Cultivation in the valleys. An interesting species of *Podocarpus* was met with here—the only conifer. *Rhododendron arboreum* and a few others.

6,000-8,000 feet.—Temperate rain-forest. About 50 per cent. deciduous broad-leaved trees, including *Magnolia rostrata*. The only common conifer is a species of *Tsuga*, which forms much of the forest at 8,000 feet. Many oaks, Araliaceæ, and Bush-rhododendrons; *Magnolia globosa*.

8,000-10,000 feet.—Rhododendron-Conifer forest. The conifers are *Tsuga*, *Juniperus*, *Larix Griffithii*, and *Taxus baccata*. Big-leaved tree-rhododendrons abound, growing gregariously and often forming 50 per cent. of the forest trees. The deciduous trees are *Betula sp.*, species of *Acer* (including *A. pictum*), *Gamblea ciliata*, species of *Pyrus* (Crab Apple), etc. Evergreen broad-leaved trees include, besides rhododendrons, several species of *Cinnainomum*, *Illicium*, etc. There is a lot of bamboo undergrowth in this belt.

10,000-12,000 feet.—*Abies*-Rhododendron forest. Here *Abies Webbiana* grows socially, forming 80 per cent. or more of the forest. The only other big tree is *Larix Griffithii*. The rhododendrons, which occur in great variety, are for the most part large shrubs or bushes forming a dense tangled undergrowth; most of the species grow socially.

12,000-13,000 feet.—*Rhododendron* scrub and Alpine meadow. The former is found on the more sheltered slopes, the latter on exposed slopes. In the meadow occur species of *Nomocharis*, *Primula*, *Anemone*, *Strobilanthes*, *Polygonum*, *Lloydia*, *Rheum*, etc. With the dwarf-rhododendrons are found species of *Salix*, *Cassiope*, *Berberis*, *Juniperus*, *Ilex Pernyi*, etc.

Above 13,000 feet.—Above 13,000 feet the vegetation becomes scanty. It consists of scattered alpins, scree plants, occasional dwarf rock-rhododendrons such as *R. repens*, and alpine turf. *Meconopsis paniculata* was found here. Above about 14,500 feet vegetation virtually ceases, though the actual snow-line lies considerably higher.

Taking the above belts in more detail, one may say that the lower forest does not differ materially from that found in other parts of Assam and the sub-Himalayan tract generally. Common trees are:—*Lagerstroemia parviflora*, *Elæocarpus serratus*, *Castanopsis indica*, *Engelhardtia spicata*, *Derris robusta*, *Ficus Cunia*, *Albizia Julibrissin*, *Pterospermum acerifolmin*, *Bischofia javanica*, and *Altingia excelsa*; and at higher levels, *Cornus Nuttallii*, *Corylopsis himalayana*, *Rhododendron Mackenzianum*, *R. Nuttallii*, etc. Between 6,000 and 8,000 feet is the highest belt of mixed broad-leaved forest. It may be remarked that in the Mishmi Hills there are no gregarious forests of broad-leaved trees—nothing corresponding to, say, the beech-forests of Europe, or even to the Sâl-forests of India and Burma. Typical trees, in addition to those already mentioned, are *Bucklandia populnea* and *Quercus semiserrata*. The first gregarious conifer, *Tsuga Brunno-niana* (?) is met with here. There are many ground-orchids of the genus *Phajus*, as well as epiphytic or rock-orchids such as *Cymbidium* and *Dendrobium*. Epiphytic shrubs abound, including *Rhododendron dendricola*; but these reach their greatest development in the next belt.

The *Rhododendron*-Conifer forest is a region of perpetual moisture, and all the trees are swathed in moss and loaded with epiphytic Ericaceæ and other shrubs. The forest is open with comparatively little undergrowth, and that mostly bamboo with small shrubs and Monocotyledonous herbs.

Higher still the forest is composed almost entirely of *Abies Webbiana*, but though these trees grow comparatively far apart, the forest is often impenetrable, because of the dense thickets of rhododendron.

Finally there is the true alpine belt, above the tree-line. About half the species of rhododendron discovered, grew here; also there

is a larger proportion of new species of alpine than in any other belt.

Above 14,000 feet there is very little vegetation.

Birds of all kinds were extraordinarily numerous in the forests throughout the summer. Owls, woodpeckers, magpies, laughing thrushes, bulbuls, honey suckers and many others were seen. There were green pigeons in the valley, and woodcock nesting at 13,000 feet, in July; in October I saw flocks of Tibetan sandgrouse in the snow; blood-pheasants and Monal pheasants occur on all the higher ranges; and in 1926 I obtained a fine new Trogon on the Burma side of the Diphuk La, and, therefore, technically outside the Mishmi Hills, but in the same general area.

Many of the birds are migrants, coming up to the forests when the rhododendrons are in bloom, in April, May and June. In the autumn they disappear, their place being taken by birds from the snow-clad ranges to the north, which feed on the innumerable berries.

Takin, goral, bear, monkeys, and other animals are fairly common; but it must be remembered that, except in the summer when these animals ascend above the tree-line, the mountains are so precipitous and the forest so thick that it is almost impossible to shoot anything except by a fluke. Certainly the Mishmi Hills are not a sportsman's paradise. The Mishmis hunt musk-deer, which appear to be rather plentiful, and there are barking-deer in the valleys.

For the benefit of future travellers it may be remarked that the Taroan Mishmis, beyond the administered line, are difficult to manage. They are grossly lazy and dislike cool work, and they are childish and dishonest in a feeble way. Petty larceny is their strong suit; but mutual suspicion and a yellow streak would probably prevent them ever indulging in a serious "hold-up" of the white man or the Tibetan, especially if they could gain their ends by non-co-operation as they did with us. Most of them—not all—take opium in excess; but as every village and almost every hut grows its own crop, nothing is gained by carrying opium for payment. They have hazy ideas of the value of money, the more remote inhabitants of the Delei valley rarely visiting Sadiya. Unlike the Abors, they do not drink much liquor; in fact above Minutang (*Chibaon* on the map) no liquor is brewed, though the Mishmis are said to indulge in wild alcoholic orgies when they go down to the plains.

The young men are truculent but easily cowed; indeed they may be said to be somewhat timid swashbucklers, and the least display of force is enough to frighten them. The Gams have only a nominal

control, but we found that when they promised to do a thing, they usually did it ; the difficulty was to make them promise anything.

There is very little traffic over the pass at the head of the Delei valley, a few Mishmis going over to the Rongtö Chu, (*Rong Thod* on map) in the summer to buy salt and cattle, and a few Tibetans coming over in the winter on their way to Sadiya. It is said that the Chulikata Mishmis come across from the headwaters of the Dibang to hunt in the neighbourhood of the Glei Dakhru, and sometimes raid the Taroan villages ; and that the Taroans have a wholesome dread of the Chulikatas. Be that as it may, very few Mishmis go to the head of the Delei valley, and when they do, it may sometimes be to steal cattle from the Tibetan settlements on the other side.

The native hunters are very jealous of their reserves, each village having its own special hunting-ground ; all the villages, however, do not hunt. The chief animals sought are gooral, musk-deer and pheasants, and they are all trapped. Very few of the Taroans have guns—unless at the time we were there they had traded them to the Abors, who were carrying on clan warfare in the Dihang valley.

The only possible routes out of the valley are the hunters' tracks up the ridges to the alpine region below the highest peaks. There are a number of caves along these trails, but at certain seasons it is difficult to find water. It is quite impossible to follow up any of the side streams, most of which drop over a series of precipices ; in any case they are all roaring torrents rushing through narrow glens which are choked with jungle. When we first went to the Delei valley we paid our coolies at the rate of a rupee a day ; but before we left we were paying as much as four rupees a day—and could not always get coolies at that !

The marches from the administered frontier are as follows :—

From Theronliang bungalow, on the Tidding river, to Delei river, three marches. The first camp, on the path high above the Lohit, is bad. On the second night one camps on a sandbank, in a bay of the Lohit—a delightful spot, with good fishing. On the third night, camp is pitched in a meadow just below the old bridge over the Delei, on the left bank of the river. From Delei Pani to Minutang (Chibaon) it is two long troublesome marches, camp on the first night being in the river-bed.

Minutang to Mitonmna—a short march.

Mitonmna to Meiliang—a long march. Camp by the torrent in a meadow by the path, a mile above the village.

Meiliang to Petai (*Tablekon* on the map). A long march, but not difficult in the dry season.

Petai to the rope-bridge—a short but difficult march. In the cold weather a foot-bridge is thrown across the river, but this is washed away by May. Good camping-grounds on both sides of the river.

From the rope-bridge to Cha Che—a ledge of rock on a cliff-face—is under two hours' march for laden coolies. Cha Che was our furthest point up the Delei. From here the path climbs 2,000 feet, and about 5 miles further on descends to the river again, where there is a good open camping-ground. From there to the Glei Dakhru (12,820 ft.) is about two marches.

THE ATTRACTION OF THE HIMALAYA.

DR. J. DE GRAAFF HUNTER.

MEMBERS of the Himalayan Club will not be surprised at the above title ; but many of them will not have in mind exactly the subject with which the article is to deal. Attraction is a compendious term which includes many very different meanings. Here it is to be used in a very special sense : and while this may at first sight appear prosaic, it leads to ideas which have a very absorbing interest to some minds.

It is the physical gravitational pull of the Himalaya which will be discussed here and the inferences which observation results make possible. This attraction is a property of all matter, as was first recognized by Newton. The special interest of the Himalaya in this respect is due to their unique magnitude both in height and horizontal extent. In the first place the result of Himalayan attraction was recognized by geodetic surveyors. Sir George Everest, after whom the highest peak on earth has been named, was concerned in India from 1818 to 1843 with the measurements of precise triangulation to form the basis of mapping in India. Before triangulation can be properly reduced, reasonable knowledge of the general form and dimensions of the earth is required. In Everest's day such knowledge was not very precise, and accordingly a primary object of his work was to determine the magnitude of the earth from his observations. His problem was much complicated by Himalayan attraction.

The phenomenon of gravity is so ubiquitous as to be a commonplace. So much so that the majority of people simply accept it

without question and do not enquire further into its origin or results. It is merely accepted that things are heavy or light as the case may be. It is not always recognized that the weight of a body varies by a half per cent. according as the body is near the equator or near the poles : and also that it is one-tenth per cent. less at a height of two miles above the earth than it is at the surface.

The force of gravity defines the vertical and is the preponderant factor in determining the general shape of the earth. The forces of attraction of a body of the size and density of the earth are so great that the shape essentially adjusts itself approximately to what it would be if its material were a simple fluid. The strength of no known substance is sufficient to enable it to remain in any other configuration. As an example, the weight of a column of granite of one square inch cross section three miles high is 8.36 tons—the same as its crushing strength (6 to 10 tons per sq. inch). Isolated columns of rocks do not occur at the earth's surface, and occasional peaks rise to greater height than this, Mount Everest itself reaching a height of $5\frac{1}{2}$ miles. The highest general level for a great extent also occurs in the Himalaya and reaches just this figure of three miles which considerations of strength have just shown to be the natural limit.

The height of three miles is formidable enough as a surface feature, but is only a small fraction of the earth's radius, so that in a generalized sense it can be stated that the earth is a spheroid—a figure not quite a sphere whose polar axis is less by one part in 300 than its equatorial axis. The statement is much more precise if the sea-level surface is considered instead of the actual surface. This sea-level surface is manifest in all ocean areas and it can be pictured in land areas if hypothetical channels, along which the ocean waters might flow, be imagined to exist. It is important to grasp this idea of the sea-level surface—what is scientifically known as the geoid—for it serves as the natural datum to which all terrestrial heights are referred. Most people are well accustomed to the statement that a mountain height is so many feet above sea-level, while not considering exactly what is meant. The precise meaning is that the height is measured vertically from the geoid—of which most people have never heard.

For the statement of height to have a full meaning, it is necessary to know the form of the geoid. This it is the work of the geodesist to determine, and it may be said at once that the geoid does not differ greatly from a spheroid—the figure developed by rotating an ellipse about its minor axis. Were the earth composed of fluid it would naturally take up a spheroidal form under the influence of the mutual

attraction of its constituent particles and the forces of rotation. Actually it does not quite do this, and as has been seen above great areas exist of elevation as great as three miles above the geoid : and the geoid itself diverges from the spheroid by amounts which may perhaps reach 500 feet (up and down). In the limited regions where its form has been carefully investigated, the divergence is as much as 50 feet. A contributory cause to this divergence is the attraction of the topographical features of the earth, and the Himalaya form a very important example.

Early in his work Everest recognized that the Himalaya would exercise a disturbing effect. The disturbance is to be perceived as follows. In the first place high-class triangulation is executed—Everest had his great arc extending from Cape Comorin at the southern extremity of India along meridian 78° up to Banog, in the neighbourhood of Mussoorie. The triangulation is controlled by several base-lines which fix its scale : and with an assumed spheroid—fitting the geoid as closely as knowledge of the day allows—the latitude and longitude of all the stations of the triangulation may be calculated.

At selected stations the latitude is also observed astronomically by means of the stars. In this way two values of latitude of each of a number of stations are arrived at, one the *geodetic* latitude, the other the *astronomic* latitude.

A little consideration will show that the geodetic latitude depends on the spheroid assumed as a basis for the computation of the triangulation. If a somewhat different spheroid were selected, the values of latitude derived would be different. Consider it in this way. The triangulation effectively gives the length between any two of its stations : for example, two stations on the same meridian may work out to be 1,000 miles apart. If we measure 1,000 miles from a starting point of given latitude along a meridian on any spheroid we arrive at another point whose latitude is determinate—the latitude being merely the inclination of the normal to the spheroid, or spheroidal vertical to its equatorial plane. Clearly with a smaller spheroid we should encompass a greater range of latitude.

With the astronomic latitude the case is quite different : for here we find the inclination of the actual geoidal vertical—as revealed by a spirit bubble—to the plane at right angles to the axis of rotation of the earth. This is a perfectly definite quantity involving no assumption.

Horizontal Himalayan Attraction.—The two values of the latitude accordingly show the tilt of the geoid to the assumed spheroid what

has been called the "deviation of vertical" or the "plumb-line deflection." The two would agree if the geoid and spheroid were coincident. Values of these deviations at three points along his arc were known to Everest. Naturally his first procedure was to modify his assumed spheroid to reduce the deviations as far as possible. After this had been done residual deviation remained : and these he attributed to Himalayan attraction. The attraction might be expected to disturb the direction in which a plumb-line would hang compared with its direction if the Himalaya were absent. The plumb-bob would be pulled towards the north by different amounts at different stations depending on their distance from the Himalaya : and this was the result which observation actually displayed.

The next matter of interest was to see whether the amounts of the deflection at the several points agreed with what could be calculated from the known distribution of mass in the Himalaya. In 1852 Everest invited the co-operation of the mathematician, Archdeacon Pratt of Calcutta, who made the first calculations of Himalayan attraction. Pratt very soon found that the agreement was in no way perfect and that the computed effect of the Himalaya at distant points was much greater than deflection actually found. This discordance provided the starting point of a most interesting investigation as to the structure of the Himalaya, which—extended to all other mountains—is very much alive to-day.

Work of Pratt and Airy.—Everest and Pratt had not very much data on which to build—actually three points at approximate intervals of 400 miles on longitude 78° , Kaliana, Kalianpur and Darmagida at approximate latitude $29\frac{1}{2}^{\circ}$, 24° and 18° . Still, they were quite enough to show that at points more than 100 miles distant from the Himalayan southern boundary, the expected Himalayan attraction was to a great extent cancelled by some other cause. In Pratt's day there was a widespread belief that the interior of the earth—the portion at depth greater than, say, 100 miles—was molten. So it was not unnatural to imagine that the crust of the earth was floating on the liquid core. Such a crust would collapse under the forces of gravity unless supported : and it was only a step further to imagine that individual features were supported by flotation, much in the manner that the ice on a frozen sea is supported.

Sir George Airy, then Astronomer Royal, also investigated the question : and both he and Pratt put forward hypotheses which to this day are current, associated with their names. Since then the word "isostasy," coined by Dutton of the U. S. Geological Survey in

1892, has been used to denote a state of affairs in which either hypothesis is embraced. In Pratt's isostasy as extended later it is supposed that below any topographical feature there is an anomaly of density uniformly distributed to such a depth as 70 miles, and such as to make the total mass above this depth of a column extending to the earth's surface proportional to its cross section. Thus in the case of a plateau three miles high the density of underlying matter is imagined to be below average by three-seventieths of average surface density. In the case of the sea a corresponding excess of density is now hypothesized by the supposition of isostasy : though this was not done by Pratt himself. Airy's isostasy was somewhat different in that he considered that the mountains floated precisely as ice-bergs do on the seas : that is they had roots of material less than average crust density, and the higher the mountain the deeper the roots.

Both Pratt's and Everest's hypotheses were developed in accord with two main ideas (a) fluid interior of the earth, (b) inability of the crust to support large features by its own rigidity. Having been stated (about 1860), they were rather lost sight of for a number of years. They had given a reasonable explanation of the observed fact of attraction, and moreover, while not explaining how the Himalaya came into being, at least made their elevated existence natural. Geological evidence suggested that mountains had been formed by lateral compression generally attributed to the cooling down of the earth and contraction of its core, whereby the crust became too large for it. Pratt's work showed that in the case of the Himalaya at least the final result was one of almost hydrostatic equilibrium—a result not to be expected if mountains were simply squeezed into existence.

Burrard's Deductions.—Nearly half a century later the matter was re-opened by Sir Sidney Burrard (late Surveyor-General of India). By this time the observational data were much increased : moreover the knowledge of the Himalaya themselves and their extent and altitude was vastly greater. It may be recalled that Mount Everest itself was only found in 1850 to be the highest mountain discovered on earth, and that the height 29,002 feet familiar now to so many, was attributed to it in 1853. Depths in the Indian Ocean were now also much more accurately known. Deflection results in the fringe of the Himalaya themselves made manifest the attraction of the Himalaya while showing that even there some compensating (defective) attraction was at work. In 1901 Burrard reviewed the results of latitude observations at 159 stations. He calculated the attractional

effect of all topography to a distance exceeding 2,000 miles, and inferred the existence of a hidden chain of excessive underground density, running parallel to the Himalaya about 400 miles south of their southern boundary. In his Presidential Address to the Indian Science Congress in 1916, Burrard stated that the Himalaya were 80 per cent. compensated, and that taken together with the Gangetic trough there was no extra mass. He denied the adequacy of the contraction theory to explain the mountains and postulated on the contrary a rift extending to a great depth. The crumpling of the hills, apparent at the surface was merely a surface effect.

These interesting deductions, not accepted by all geologists, were derived from consideration of the horizontal attraction of the Himalaya : but the complexity of the subject is apparent. It was not possible to disentangle Himalayan effects from non-Himalayan effects with absolute precision : and, as is usual in such investigation, the scope of the enquiry was greatly extended. Burrard's early researches into the Himalayan attraction stimulated similar enquiries outside India. In the United States, Hayford, in 1909, published his account of his determination of the Figure of the Earth from deflection observations, and introduced his hypothesis of universal compensation and isostasy, which has since then been accepted by many geologists and geodesists. Hayford accepted Pratt's conception of compensation, and applied it not only to great mountain ranges as Pratt had done, but also to every topographical feature whether above or below sea-level. He deduced 70 miles as the most probable general depth at which compensation was complete.

Intensity of Gravity.—So far I have referred to the horizontal pull of the Himalaya : and it is to be noted that observations of this have only been made, with few exceptions, at points external to the hills or near to their southern boundary. There are greater technical difficulties in carrying out all the necessary observations far into the hills themselves, but this is now being done as opportunity offers. Precise observation usually requires heavy instrumental equipment, difficult of transport in vast mountain ranges ; and for deflections continuity with the external work is essential. There is however another method of attack, namely, the measurement of the actual force of gravity. This force can be found with great precision by observing the rate of swing of a pendulum. Clairault's celebrated theorem, as subsequently developed, enables us to build up a formula for gravity on a spheroidal earth, and the pendulum observations show anomalies of gravity which can be used in enquiries into the

state of affairs below the surface. Properly reduced these anomalies indicate the vertical component of attraction of the neighbouring matter, and the results are less disturbed by outlying causes than are those of the deflections.

Pendulum observations were begun in India in 1865 and terminated in 1871. In the latter year after leaving Moré, a plateau of altitude 15,400 feet in Ladakh, for a higher station, the observer Captain Basevi lost his life. For many years no other observations were made. The Moré result would have been of especial interest on this account: but unfortunately a source of error—sway of the pendulum stand—was not foreseen at the time of observation, and it has been impossible to make satisfactory allowance for it subsequently. A new series of pendulum observations were begun in India in 1903 by Major (now Sir Gerald) Lenox Conyngham. The rate of swing of a pendulum depends on the force of gravity and also on its own effective length. This latter varies with temperature and it is only recently that satisfactory observations have been possible unless made in a substantial building, in which temperature variation can be considerably controlled. On this account the observations were formerly restricted to places where bungalows were to be found. In 1925 Major Glennie carried his pendulum observations into Kashmir and to the Deosai plains, thus penetrating the Himalaya to a considerable extent.

Recent Himalayan Results.—On the Deosai plains at an average elevation of 12,800 feet, Glennie found considerable positive anomalies of gravity, indicating that the Himalaya there were not fully compensated. A stratum of ordinary surface density rock, 1,500 feet thick, would be adequate to account for this, indicating that compensation of mass is here about 88 per cent. At other stations to the south and near the Kashmir valley smaller anomalies were found. Moreover there is a preponderance of southerly deflection of the plumb-line, which when taken in conjunction with results in the Punjab seem to be in contradiction to the gravity results. Still further observations are required to clear up this point.

Such observations will go far to determine the outstanding doubts as to the state of affairs underlying the Himalaya. Up to date they can only be made by a party specially organized for the purpose—such as Major Glennie's: or the general scientific and exploratory expedition of Sir Filippo De Filippi in 1913-14 or that of H. R. H. the Duke of Spoleto, which will be at work in the Karakoram this year. The ordinary pendulum apparatus is heavy and the observation

protracted, so that nothing can be done in this way by the ordinary Himalayan traveller. However some difficulties are becoming less formidable than formerly. For example, precise time-observations are no longer necessary, as these can now be replaced by wireless time-signals. The temperature difficulty is removed by the employment of invar pendulums which vary very little in length. Perhaps the time is not far distant when gravity-observations will be within the scope of a moderately-equipped Himalayan expedition. When this is possible we may hope to gain adequate knowledge of the attraction of the Himalaya, and understand more completely the basis on which they rest.

THE URTA SARYK VALLEY.

LIEUT.-COL. REGINALD SCHOMBERG.

THE Borokhoro mountains are the north-western offshoot of the Tien Shan. North of them again are the Zungarian Alatau, which link up the mountain system of Central Chinese Turkistan with the more northern ranges which end in the Great Altai. The Urta Saryk valley connects the Borokhoro with the Alatau.

The valleys of the Tien Shan which run from south to north are nearly all remarkable for their narrow precipitous mouths, which make their ascent extremely difficult. The features of the Urta Saryk are typical of these northern glens.*

The main road from Kulja (Ili) to Manas, climbs the Talki pass, and descends a few feet to the gently-sloping grassy shores of the Sairam Nor, one of the really beautiful Central Asian lakes. North, and immediately opposite, is the watershed between the Sairam Nor and the Urta Saryk. The hills that encircle the lake carry but scanty forest, but on crossing into the Urta Saryk, the traveller meets with steep hill-sides, covered with abundant spruce.

The valley is about seventy-five miles long, and its lower half is precipitous. The left, or northern, side is remarkably so, and the path leads up the right side under high crags. The first twenty miles from where the Chobata pass leads from Sairam into the valley are extremely awkward. Above the precipices on the left side of the

* The Urta Saryk valley is shown on the sketch map at the end of this volume.

valley is a rolling down-like country, ending abruptly 200 to 300 feet from the stream.

As the valley is ascended, it flattens out, the spruce ends, and the appearance of the upper part is rather dreary and forbidding. Hills with scanty grass and much stone rise from the river, which sprawls across the floor of the valley, a fordable but uninteresting stream. Lower down, the same river is a fine mass of water, rushing over large boulders, and quite impassable to laden ponies. At the head of the valley are the snow peaks that form the frontier with Russia. It is not far-fetched to compare the upper half of the Urta Saryk with Ladakh, and the lower half with some offshoot of the Sind valley in Kashmir.

In July 1928 the weather was execrable. Heavy rain fell nearly every day, usually for five or six hours in the afternoon. It was restricted to the upper part of the valley. The flowers in July were nearly over, but the river-sides were carpeted with blue aconite stretching for miles, in great luxuriance. There were quantities of large white gentians—the blue ones were over. There was also a purple primula of immense height, some of the stems of the flowers being two feet long. No ferns were to be found. The season for flowers in the Tien Shan is much shorter than in the Himalaya, and this applies more especially to the northern valleys.

The Urta Saryk valley was completely deserted, for the Kazaks graze there only during the early winter. To me the absence of man was a great relief.

THE WAY TO THE BASPA.

MAJOR D. G. P. M. SHEWEN.

ONE of the first things that strikes a visitor to the Baspa valley is the paucity of names in the Visitors' Book at Sangla, the comfortable bungalow that marks the end of the forest-road, and this is all the more curious when one is told that it is numbered among the most beautiful valleys in the Himalaya.

The road is easy and the journey comfortable with bungalows all the way, but travellers on the Hindustan-Tibet highway seem to find other attractions, though surely, as they pass the picturesque junction of the Baspa and the Sutlej, they must feel some curiosity to know what lies hidden round the corner of the hill. The journey is of course a long one for a limited leave, even with double marches,

and the sightseer who walks to a time-table to see the Rogi cliffs at Chini has no time to spare for excursions off the beaten track, while the sportsman either leaves the road at Wangtu to cross the Bhaba pass in search of the Spiti ibex, or confines himself to the valleys on the right bank of the Sutlej.*

The Baspa, however, has attractions of its own for the artist, the climber, the scenery tripper and even for the sportsman, if he can get his leave early in the summer before the burrhel have retired with the snow to the uttermost heights. It has been suggested more-over by one who is competent to judge, that Sangla may one day be the Zermatt of the Himalaya. A brief description of the valley and the road that leads to it may therefore be of interest.

There are more ways than one to the Baspa, and it is possible to start from Mussoorie and follow Kim's memorable journey, striking the valley where the passes from Tehri-Garhwal and Tibet sit *vis-à-vis* at the river's source. But the simplest way, if one is not pursuing the agents of a foreign state, is to pack up one's kit in a Simla hotel, and set a course for Wild-flower Hall where an excellent lunch and a yarn about the road with mine host, who has travelled it as far as Chini, will put one in a good humour for the onward march.† The

* Modern surveys only extend to Taranda. As far as Rampur there are one-inch maps (53E/4, 7, 8, 11); half-inch maps exist as far as Taranda (53E/sw, SE and NE). Beyond Taranda only the old quarter-inch Atlas map, 53-I, is available. It is to be hoped that the modern survey will be extended to the Baspa before long.

† Mr. R. MacLagan Gorrie, *Hon. Assistant Editor* for Bashahr, writes:—

Alternative approaches to the Baspa from Simla *via* Kotkhai and Rohru are found in the Buran and Rupin passes across the Dhauladhar range, and midsummer visitors might find these quicker for a short visit.

The Buran, or "Boreendo" as it was called by Gerard in 1821, is at the source of the Pabar, and the road from Rohru follows this river. According to Burrard and Hayden the height of the pass is 15,121 feet, and on the Baspa side the road leads down to Brua village.

The Rupin pass is further east and necessitates an additional but less strenuous climb to cross from the Pabar valley into the "Dodra Khwar," as the upper valley of the Rupin river is called. The pass is about 15,000 feet, and on the Baspa side the road drops down directly above Sangla village.

Both these passes are used by local shepherds during the summer and are usually passable by the last week in May or first week in June, but even after this one may encounter a good deal of snow, and there is no possibility of using any transport but coolies, for which special arrangements would have to be made through the courtesy of the Raja of Bashahr. There is an amusing and interesting account of the Rupin pass in the November 1927 number of the "*Indian Forester*."



THE DESCENT FROM THE RUPIN PASS TO THE BASPA, WITH THE
KANAWAR KAILAS GROUP RISING STRAIGHT ABOVE THE VALLEY
TO 21,000 FEET.

Photo. R. MacLagan Gorrie.

first 40 miles as far as Narkanda is well known and needs no description. The road is wide and good and easily graded, but although a small car can negotiate this bit without difficulty, the traveller need not entertain hopes of thus rapidly putting the first stretch behind him as the privilege of the motor is reserved for the exalted few. Fagu and Matiana are the two intermediate stages and then a gradual rise for 11 miles brings one to Narkanda which stands at 9,000 feet and affords magnificent views.

It will be well to state here, for the benefit of the impecunious, that the dak bungalows as far as Narkanda, though excellent, are ruinously expensive, and it pays the traveller to pitch his tent in the compound for a small fee and feed himself.

Beyond Narkanda he has a choice of ways, either by the upper Briggs' road which follows the hill-tops, or by the Hindustan-Tibet road proper along the Sutlej valley. If pressed for time, the latter is the shorter by two stages as far as Sarahan, where the roads again unite, but whereas the upper road is cool, through lovely woods and flowers, every step down to the Sutlej at Nirth makes one warmer and stickier, and the hillsides are brown and bare.

Choose then the upper road, which after four miles downhill towards Thanedar, breaks off to the right and winds through dense woods to Bagi, a pleasant morning's walk of ten miles. The mules will be glad of a rest here while lunch is consumed, and then the remaining seven miles to Khadralla is level going, through woods and blue flowers, green hillside and flowers, flowers and woods again.

Khadralla is however disappointing, with scanty supplies, no grass, and water a mile distant, whereas Sungri, the next stage, has plenty "to eat and drink" for man and beast. It is better therefore to halt at Bagi after a short march and go through to Sungri, sixteen miles next day, all level and easy marching. From Sungri, six miles downhill through pretty woods to the Machhad Gad followed by six miles up on green but open hillside brings the traveller to Bahli dak bungalow perched on the far side of the spur, overlooking the Nogli Gad valley, with a wonderful view in clear weather.

Another alternative is the Nela pass from the head of the Baspa valley across to Karkuti and Harsil in the Baghirathi valley in Tehri Garhwal. This, however is over 17,000 feet, and entails a considerable amount of difficult glacier-work. From the Baspa side the pass is two very difficult marches beyond Sanchu village; both supplies and coolies would be decidedly difficult.

The road beyond here was broken by heavy rain on the occasion of our trip and had still not been repaired a month later on the return journey ; I regret therefore that I can give no account of it. We were forced to drop down the hillside by a rough track to join the Sutlej road at mile 67, and follow this for four miles into Rampur,—a march of thirteen miles from the cool hill-tops to the warm perspiring valley.

Rampur (3,000 ft.) is worth mention as the capital of the State of Bashahr, and has a big bazar, post and telegraph office, school and hospital and the winter palace of the Raja, while a Tibetan library containing a gigantic prayer-wheel is the first sign of Buddhism on the road. The State rest-house a mile below the town is very comfortable and has a pretty garden ; there is also a P.W.D. bungalow two miles further up river. The road now leaves the river and climbs steadily for ten miles and 3,000 feet to Gaura, a hot march at first until the trees are again reached about eight miles up. From here it is ten miles to Sarahan, with the Manglad Gad to be negotiated en route. The road beyond Gaura deteriorates, and after a steady drop to the Manglad, which is crossed by a wooden bridge, the subsequent steep climb is rough going, until the Briggs' road is rejoined at Dheu, whence a good level track of three miles leads to Sarahan bungalow.

Sarahan, the summer capital of the State, is a widely-scattered series of hamlets on a gently-sloping hillside, terraced with cultivated fields. In September there is a big fair, the people bedecking their headgear with blue flowers ; and the music, heard in the distance, is strikingly reminiscent of a Tibetan devil-dance or a service in a Buddhist monastery.

From here onwards this tendency towards Buddhism is much in evidence. Beyond Sarahan the road is wide and good and drops gently for nine miles through pretty woods to Chora forest rest-house, a delightful spot a hundred miles from Simla by the H. T. road. The Matla cliff, scene of a fatal accident in the days when the Government of India, with no Legislative Assembly to criticize extravagance, migrated to Chini for the hot weather, is passed at about mile 95. Its peaceful air and apparently safe and well-engineered road sets one wondering on the nature of the accident which is so carefully recorded among many others on the charts to be found on every rest-house wall, to cheer the nervous traveller on his way.

Taranda is reached at mile 106 after another climb down to the Chhaunda Gad, followed by a steep rough ascent, the bungalow being

surrounded by trees over the spur. As this is only fourteen miles from Sarahan a good alternative halt for the energetic traveller is Paunda rest-house five miles further on. Between the two places lies the Soldang Gad of evil repute.

It is two miles of good going from Taranda to the steep zig-zag descent to the Soldang Gad bridge below the infamous cliff which periodically fells man or animal with a rock.

The local people of Paunda and Nachar and also further up the road were full of unpleasant stories of this cliff, one legend being told of a "Djin" who lived at the top and demanded an annual victim. Altogether the cliff has a most unsavoury reputation. When I was here with Lieut. Macleod Carey of the Royal Artillery last September, a large boulder, dislodged after heavy rain, came bounding down the cliff with a shower of smaller rocks and stones. The file of men and mules was negotiating the steps of a narrow steep path and although a dash for safety was made at the first warning shout, one of the mules was hit and killed on the spot. When the fall was over and "All clear" sounded, Carey's Sikh orderly was missing. He was discovered unconscious behind the dead mule and died in five minutes, a tragedy which marred the whole trip.

Nachar, where a day's halt was called to rest a somewhat shaken party, is reached after four miles of easy going through woods from Paunda, and here is to be found the Divisional Forest Officer's headquarters. If the Forest Officer himself is occupying the bungalow, there is an excellent camping-ground below, and although the grazing is reported to be poisonous, good grass can be obtained through the stage mate.

Beyond Nachar a change comes over the country as the monsoon limit is passed, but the road is not uninteresting in spite of dry hill-sides. An abrupt drop for three miles leads to the Wangtu bridge just beyond the P.W.D. rest-house, and crossing to the right bank the road almost immediately straddles the narrow mouth of the Bhaba river by a wooden bridge, over a tumbling cascade of foam, and plunges into the Wangtu gorge, where it clings to the cliff-side until it emerges on gentler slopes beyond.

The next few miles are dull and warm as the road undulates gently on a dry boulder-strewn hillside, never very high above the river, until the H. T. road is left to wind its course to greater heights, while the traveller to the Baspa keeps straight on to recross the Sutlej at the Sholtu bridge. Leaving the charming little forest rest-house of Sholtu with its delightful garden away on the right, the path,

now a forest-road, mounts steadily through a parched and desolate country to Kilba bungalow, four miles from the bridge and high above the river.

The village which is down near the river, was making high holiday on our arrival, and sounds of revelry and deep trumpeting Tibetan music were all that came up from below, everyone being too drunk to attend to our wants. Kilba however produces but scanty supplies at the best of times and it was a relief to get away next morning.

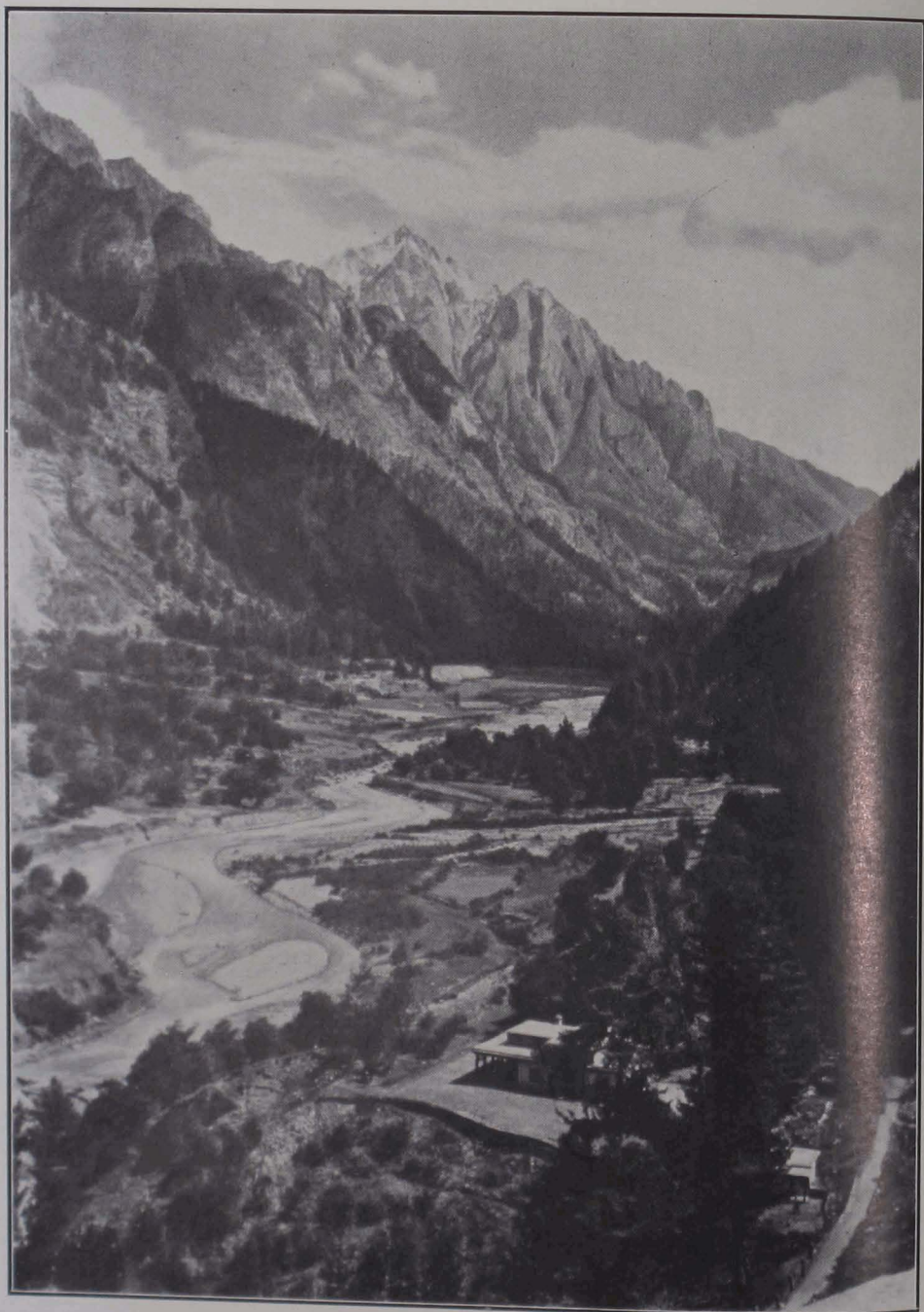
The road from here winds downhill back to the Sutlej bank, among the same dry country of stunted bushes and trees that have not enough colour between them to tinge the hillside green, and then to the Baspa's mouth, an hour's march across gigantic rock-slides of ancient origin. The traveller feels within reach of his destination at last as he turns up the wind-swept valley, with the roar of the mingling rivers in his ears, the Sutlej emerging in front of him from a narrow gorge flanked by high cliffs, with the H. T. road winding its way to Chini far above on the other side.

The Baspa road mounts steadily at once, passing Brua with its holly-groves three miles up, the gradient getting a little stiffer as Sangla is approached. The hills slope steeply down to the water's edge and the river, which falls very suddenly from the Sangla valley, is a foaming mountain torrent the whole way. The road enters greener and prettier country as it rises above 7,000 feet, crossing one or two mountain streams en route and about eight miles up from the mouth, zig-zags suddenly up and over a wooded cliff. As this spur is rounded the forest suddenly opens out and the "Promised Land" bursts upon the view, a lovely scene backed by a fine snow peak.

The way now leads down grassy slopes and across a peaceful smiling valley richly coloured with pink and russet crops in late summer. The river flows lazily across this valley and a country lane with yellow flowers and walnut-trees winds pleasantly for two miles until another cliff is passed, beyond which is the forest rest-house with the wooden bridge below it, and Sangla village on the opposite bank.

Here endeth the made road, and the mules must be left to graze gorgeously on the luscious Sangla grass, while the traveller who wishes to wander further afield must hire coolies from the village and pitch his tent where he rests.

Rakcham and Chhitkul are the only villages above this in the valley, eight and fourteen miles respectively from Sangla, but we marched as far as Sanchu, the camping-ground that marks the "inner



THE BASPA VALLEY AT SANGLA SHOWING IN THE BACKGROUND
THE GROUP OF 20,000 FT. PEAKS ABOVE RAKCHAM.
Photo. R. MacLagan Gorrie.

line," beyond which none may go without a pass. After crossing to the right bank at Sangla there is a path all the way up, a minor route into Tibet ; but for one or two rocky spurs it is easy enough for mules to traverse, until the gorge is reached four miles below Sanchu where it degenerates to a mere goat-track on steep and treacherous shale slopes.

Water is plentiful everywhere below here, including the good camping-ground half-way between Chhitkul and Sanchu, called the *Black Rock Parao*, from the spur opposite the camp ; at Sanchu itself river water only is available. Supplies must, however, be brought out by coolie from Chhitkul, which village produces milk, chickens and potatoes, while a sheep or goat can always be bought with a day or two's notice. Rakcham can also provide the same fare while Sangla can produce a few eggs in addition.

The Baspa valley is undoubtedly beautiful—narrow between steep hills as far as the Raturang Falls where the valley widens suddenly, and beyond the defile at Sangla it widens again, the river passing through one or two similar defiles formed by rocky spurs until the Chhitkul plain is reached, when trees are left behind and the flanking hills are bare except for dried-up grass, and an occasional silver birch. The numerous peach-trees at Sangla and Rakcham attract black bear at night, and the villages have extensive fields of barley, *ogila* and *papra*.

A climb to any of the grassy spurs affords a magnificent view of snow-peaks in every direction, but the snow is very high late in the year, and I only reached snow on one occasion while stalking burrhel, at about 18,000 feet. The peaks run from 19,000 to 21,000 and at the head of the valley where the road crosses the pass into Tibet a fine snow-peak not twenty miles away can be seen from Sanchu.

The people of the Baspa are friendly and ready to help in any way, but dirty beyond description. They are rapacious in their demands, caring nothing for the State rates. Their religion seems to be a hybrid, calling itself Hindu, but savouring strongly of Buddhism, and a red Lama and his *chela* were met on the road spinning a prayer-wheel, a form of worship popular in the villages.

The road up the valley is marked at intervals by large *Mani pani* stone altars, with neatly carved inscriptions on slabs bearing the Buddhist inscription *Om mani padmi hum* ; these are carved by local lamas and sold to Tibetan travellers, two or three of whom we met trekking into India, with their wares on their backs. A

most curious sight at Chhitkul was an almost exact replica of a good-sized dog-kennel, described as a *dipta* (*deota*) by the villagers; the word is applied to the shrine or house for the local god, though strictly speaking it is the name of the god or goddess. Apart from this, all buildings were picturesque and somewhat Mongolian in style of architecture.

There is a pass above Sangla village that looks easy, but on which an evil spirit is reputed to live; it is said to deny the right of way by the simple process of hurling stones on any who have the temerity to dispute it with him. The pass is approached from the village through crops and abundant wild raspberry-plants and thence over dry stony ground where chikor are to be found. The route would probably be a short cut to some of the greater peaks.

On the return journey our party, travelling against time and finding the upper road still blocked, took the lower road and marched two stages from Rampur in one day, a practice which is not recommended unless the weather is very cool. The first eleven miles follow the Sutlej to Nirth, a warm march, but in the next nine miles to Thanedar, a climb of 4,500 feet has to be negotiated in seven and a half miles on a blazing hillside, devoid of water or cover from the sun. As the cool shade of the trees is entered at the top the temperature drops suddenly, and the little bungalow of Thanedar is a cosy haven in the evening with a good log fire. An easy and pretty march of eleven miles next day brings one to Narkanda and so back to civilization, which in fact never seems far away on such a well-organized road.

A stage mate, maintained by the State, is found at every bungalow, who will produce supplies in a very short time and coolies if required, and both he and the P.W.D. chaukidar can be very helpful in many ways if judiciously tipped.

Chickens, eggs, milk, sugar and vegetables are always on the menu, while fruit in season is to be found in some of the bungalow gardens, many of which also abound in chestnut-trees. The vines at Sholtu provide a welcome change of diet if permission is obtained to use this bungalow, which is however just off the beaten track for any but forest officers. Some day it may be a halting place for charabancs on the road to the Baspa Hydros. Who can tell? God forbid!

TWO EASY PASSES IN KANAWAR.

R. MACLAGAN GORRIE.

DURING the season's work in the forests of the upper Sutlej valley in Bashahr State, I had occasion to travel by the Haran Pass (12,350 feet) which connects the main Sutlej valley with its tributary the Baspa, and also the Runang Pass (14,500 feet) which lies on the old trade-route into Tibet from the Sutlej valley at Kanam.* Neither of these passes require any mountaineering whatever, and one needs only a sound pair of lungs and a "heather step" to avoid the innumerable roughnesses of well-beaten village paths. Both however have a very vital place in the economics of Kanawar, and are well worth a visit from any tourist for the magnificent views which they give of the Himalayan and Zaskar snows.

The Haran *ghati* was used this summer by Sir Malcolm Hailey when he made a lightning visit to Chini from Simla. Chini lies on the Hindustan-Tibet road, 150 miles from Simla, and its fascination was first discovered by Lord Dalhousie, who escaped from his Viceregal duties away back in the 'forties until he was pursued and retrieved by some officious secretary. It certainly is a delightful spot to escape to, for it avoids most of the monsoon, and from its terraced fields the views of the Sutlej, 3,000 feet below, and the towering snows of the Kanawar Kailas immediately across the valley are superb.

From Chini a path leads down to the Sutlej which is crossed by a *jhula* in which a strong wire cable has replaced the old-fashioned rope bridge of twigs, so that the crossing now provides a comparatively mild thrill. Then the path goes by the river-side to Shongtong, where there is a tiny forest rest-house, and thence 3,000 feet straight up the hillside to a camping-ground above Barang village. From there the road climbs steadily along the hillsides of the main Sutlej valley through deodar forests to Mehbar village, and then above the forest through upland pastures to the pass, which actually takes one through a slight col in the hog's-back ridge running down from the Kailas group of peaks, three of which are over 21,000 feet, to the junction of the Sutlej and the Baspa.

There is another good camping-ground half a mile below the pass in a grassy glade amongst the high-level spruce trees. The pass itself is decorated with innumerable stone cairns, which are said by

* See the old Survey of India quarter-inch map, 53 I. There is no modern survey of this area.

the local people to be of very great age, and certainly bear witness to its use as a highway. The view from the col gives a very good impression of the geography of this part of the hills, for immediately below is the Baspa valley, a real gem of its kind, and reminiscent of some West Highland glen with its rolling moraine terraces at the foot of precipitous cliffs. Across the Baspa lie the Buran and Shathal passes leading into the Pabar and Tons valley; beyond them stretch the snows of Tehri Garhwal, while behind towers the "Castle Rock," an aiguille of the Kailas group, and away to the north is the wide expanse of snows which separate the Parbatti and Spiti rivers from the Sutlej basin.

The descent from the *ghati* is rougher and more precipitous than on the Sutlej side, as the path drops down 4,000 feet to the village of Sangla in the Baspa valley, but it is nowhere difficult and the hardy hill-ponies are brought over regularly by this route. There is an alternative route by the forest bridle-path which has been carved out along the base of the stupendous cliffs of the Sutlej gorge, thence across the Baspa river at Karcham bridge, and so on up the Baspa valley road, but the upper path is undoubtedly more pleasant.

The approach to the Runang pass lies much further up the Sutlej valley, as the local trade-route into Tibet leaves the Hindustan-Tibet road at Kanam, 34 miles beyond Chini, and climbs over the Runang to Sugnam village, which lies in the valley of the Thanam river, better known locally as the Ropa Gad. The Hindustan-Tibet road has now been extended to Pu, further up the main Sutlej valley, with the idea of opening up the route into Tibet via Shipki to Gartok, but from the local people's point of view it would have been more useful had the Runang and Hangrang passes been opened up, as all the Kanawari traders have their definite "beats" across the border for their summer trade expeditions towards Rudok, the Gartok areas being monopolized by Garhwalis and Bhotias. The improved road to Pu however makes an alternative route to Sugnam possible, as one can go one stage beyond Kanam by the H. T. road to Shiasu, and thence by a tolerably good village-path up the Thanam valley to Sugnam, returning by the Runang in the reverse direction. The pass is certainly a much pleasanter climb from the Sugnam side than from Kanam, where the ascent is steep and shaley, while from Sugnam there is a fairly good path with no difficult gradients. The height of the pass is 14,500 feet, but it is usually clear of snow quite early in the season, and the view from the top is a magnificent panorama, which includes the Manirang peak to the north, Leo Pargial to the

north-east, and the Kailas and Morang groups immediately across the Sutlej.

Neither of these trips can be undertaken with fully-loaded mules, but they could both be visited by lightly-laden mules or by the hill pack-ponies carrying their normal burdens. Coolies, particularly in the neighbourhood of Shiasu and the Ropa Gad, are difficult to arrange, though for the Haran *ghati* they can usually be obtained from Barang or Sangla.

A JOURNEY THROUGH SPITI AND RUPSHU.

MRS. K. G. LETHBRIDGE.

HAVING obtained two and a half months' leave from the end of May last year, my husband and I started from Roorkee on the 30th, bound for Kulu by way of Pathankot and the Kangra valley. We left the train at Pathankot and took a 30-cwt. lorry in which we could pack all our kit, and drove the first day as far as Palampur, a pleasant place full of tea-gardens and Scotch firs. The next day we covered the remaining thirty miles to Guma, where mules were waiting to carry our baggage over the Babbu pass into Kulu.

Our general plan from here was to cross the Hampta pass into Lahul, travel up the Chandar valley and take the Kunzam pass into Spiti. From Spiti we were to make our way into Rupshu, and, if luck went with us, wander south-eastwards to the borders of Chumurti, near the source of the Hanle river.

On 3rd June we arrived at Jagatsukh in Kulu, which is the jumping-off ground for the Hampta pass (14,000 feet). We had written ahead to arrange for coolies, but owing to a cholera epidemic, the duplicity of the lumbardar, and the natural aversion of the Kulu people to any hard work, we were delayed there three days. Had it not been that our shikari from Spiti with two or three other Spiti men were waiting at Jagatsukh when we arrived, we might still have been there, for they helped us to put an end to the blackmailing policy of the lumbardar, although we finally had to pay three times as much as the nerrick rate quoted in the Punjab Route-Book.

We had twenty-four coolies; sixteen loads being our own, the rest firewood and rations. When crossing the Hampta pass, no Kulu man will carry an ounce over 40 pounds, as we soon found to our cost when the village scales were produced and the loads cut down to the last quarter-pound tin of tobacco.

It is two marches from Jagatsukh over the pass into Lahul. We were the first to cross from Kulu this year, and our second march was entirely over snow. There was an unpleasant snow-slope to negotiate just after topping the pass, but our Spiti men, who were entirely without fear, cut steps and everyone got down safely. We were helped greatly by having iron crampons of a sort that could be put on and taken off quickly over any kind of footwear.

We turned eastwards up the Chandar valley in Lahul which is uninhabited, and had not yet received its summer visitation of nomad shepherds. The route taken in winter is along the right bank of the river, but by this time the snow-bridges had broken, and we had to keep to the left bank and make a route for ourselves. Later in the year there are well-marked goat-tracks and the going is comparatively simple. Except for a small clump of silver birches below the Hampta pass, there is no kind of firewood until Spiti is reached. The marching is almost entirely over large rocks and very tiring.

On the 10th June we crossed the two Shigris (glaciers), both of which are receding. The Chota Shigri ends in a sheer wall of ice, cut perfectly smooth and without a blemish. The Bara Shigri fills the whole valley with its piles of moraine. Both the streams issuing from them were unfordable and we had to make a detour across the ice, a particularly long way round over the Bara Shigri. Our Spiti shikari said that year by year this detour gets longer as the snout of the glacier retreats. This march, which we calculated to be about eighteen miles, took us eleven hours.

The following day we crossed the Kunzam pass (14,930 feet) into Spiti. There was hardly any snow on the pass and the climb was gradual and easy. We spent a day at Losar, the first village we struck, paying off the Kulu men—with thanksgiving—and arranging for transport in the Spiti valley.

Our plan was now to cross into Rupshu by the Takling La. We had sampled the Parang La two years before and were not keen to go over it again. The Takling La is off the direct route, and not much used; but unfortunately for this reason we could find nobody willing to cross with us. No one had been over it as yet this spring, whereas the first traders from Rupshu had already begun to cross the Parang La into Spiti.

After a few days' waiting in the Takling Nala, where our water supply was a snowdrift and our tent was very nearly carried off by the wind, we marched for Toomleh in the Kibar Nala, where we had arranged for our transport to meet us. We had now fifteen loads

all indispensable, consisting of food, tents, clothes and rifles—no camp furniture except a canvas bath. We had two tents, a single-fly for the servants, and a double-fly light-weight green canvas one for ourselves, which weighed 28 lbs., and was about the size of an ordinary 80-lb. tent, though nothing like so warm. The food consisted of supplies for two months as nothing can be counted on either in Spiti or Rupshu. We finally started for the Parang La on the 17th June, the first to attack it from the Spiti side that year. Our transport consisted of two yaks and a dozen or so men, some of whom simply came for the fun of the thing. In Spiti one does not pay by the man, but by the load, and sometimes a whole village will turn out to carry one's kit.

From Toomleh we crossed the pass in three stages, first climbing about 3,000 feet to the downs of Traltak; then dropping into the gorge of the Kibar river and climbing up the other side to a camp under the pass at about 17,000 feet; and lastly crossing the pass (18,300 feet) to the glacier and down into the Pare valley. We were obliged to take the stages slowly on account of the yaks as there is no feeding between Traltak and the first halting-place in Rupshu, and owing to their poor winter feeding the animals in June are thin and out of condition. Our last camp in Spiti was fearfully cold and we were surprised to see yellow-billed choughs apparently enjoying themselves at that altitude. At 4-30 A.M., before starting the last climb, the thermometer registered 8°F. We reached the summit before sunrise, and by that time it was a good deal colder. The glacier on the Rupshu side of the pass seemed untouched by the fact that it was nearly mid-summer, and we ran down without any precautions over a smooth slope of snow. Two years previously we had crossed under very different circumstances in July, just after a Tibetan had lost a yak in one of the crevasses. The pass closes again about the middle of September.

We picked up new transport from Kanzok on the Tso Moriri, consisting entirely of yaks, and continued our way down the Pare river as far as Monkhar. Here we saw a lot of bar-headed geese and quantities of brahminy duck, the latter seeming very fond of perching on high cliffs and on exposed rocks on the tops of hills. At Monkhar we left the river and cut eastwards across the downs for two marches, finding much game *en route*—burrhel, ovis ammon, and Tibetan snowcock. We were lucky enough to shoot three good burrhel, the horns measuring 30, 26½, and 25½ inches.

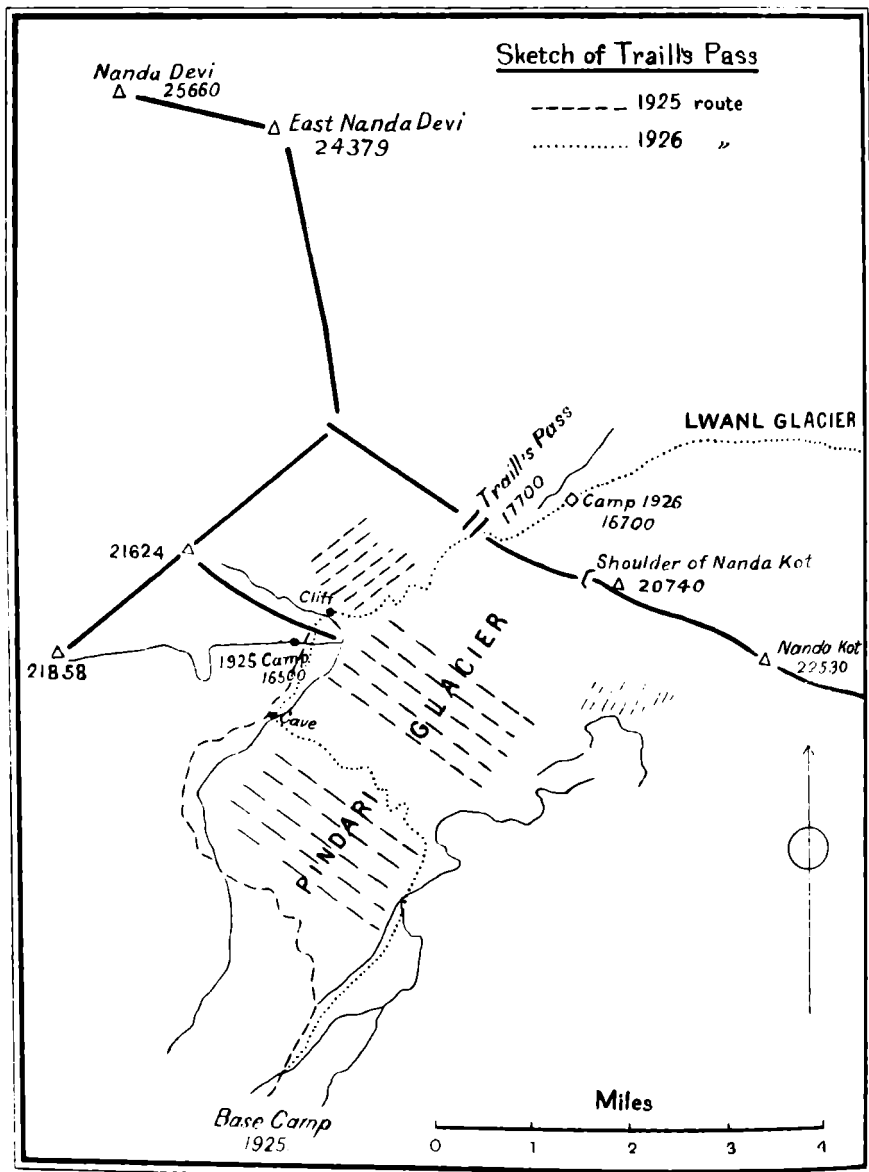
The ultimate object of our journey was to reach the Imis La on the Tibetan border, but from here onwards our maps were inclined to fail us, and we spent a trying day looking for the Kyungzang pass, leading out of Rupshu into the Hanle province. In a country of downs, however, a pass is not essential, and we finally crossed the ridge at a great elevation—we calculated we must have touched 20,000 feet that day—and dropped down to a camp a few miles from the Hanle river. This was the only occasion on which our Spiti men suffered from mountain-sickness.

We followed the Hanle river towards its source until we were within a few miles of the Imis La. We were camping then at 17,500 feet, which we found too cold for comfort, so we dropped a couple of thousand feet and camped near the river, spending a week or thereabouts in search of ammon and Tibetan gazelle. The number of kyang here was stupendous, and we got positively sick of mistaking them for other things.

Having bagged a 42½-inch ammon and a 12½-inch gazelle we decided to return by way of Hanle to the Tso Moriri. It was now getting on for the middle of July and the summer may be said to have set in. Certainly in the Hanle plain the sun was most unpleasantly hot in the middle of the day. We again changed transport here, sending our first lot of yaks back to Kanzok. The facility with which we obtained transport was entirely due to our Spiti shikari, who was friendly with the important personages both of Rupshu and Hanle.

We had two more passes of 17,000 feet to cross before we finally dropped to the edge of the Tso Moriri. However these "down" passes are quite free of snow, as are all the hills here below about 20,000 feet, owing to the small snowfall and the high winds. Obviously another foot or two of snow in winter would make the country uninhabitable, as the nomads depend on feeding their animals on the hill-side all the year round. There is never enough grass to collect for winter feeding. At times when there is abnormal snowfall, the animals die in hundreds, witnesses by certain camping-grounds we passed, marked by nothing but piles of bones.

We marched round the northern end of the lake, which is increasing in size, as we found to our cost when we were cut off by a huge lagoon not marked on the map. The rocky island off Kanzok still shown on some maps has been submerged for years. There were quantities of bar-headed geese and brahminy duck with their families paddling about near the edge of the lake, and recently deserted nesting-places



all along the shore. There were also black-crested mergansers and small ducks, which I think must have been pochards.

At Kanzok there is an important lamasery and one house, which belongs to the Gova of Rupshu, the head-man of the nomads. It was a few days before the annual fair and the lamas gave a devil-dance in our honour and allowed us to attend a service in their temple. We inspected the summer encampment of the nomads a few miles above the lamasery, where they were collected together for the yearly shearing of sheep and yaks. The weather was unkind to us ; it was intolerably hot in the middle of the day, once registering 108°F. in the tent, and in the evening tremendous squalls attacked us from across the lake, so that we had to hang on to our tent-poles to prevent the tent from blowing away. These storms followed us all the way up the Pare valley to the Parang La, which we re-crossed into Spiti on 22nd July in great fear lest we should be caught by one of them on the top of the pass.

Spiti was in the prime of summer and full of glorious flowers. We still had a week to spare and spent it moving back slowly towards the Kunzam pass, enjoying the luxury of gentle marches, plenty of gossip and fresh yaks' milk to drink.

The rest of our journey was uneventful. Lahul was a rock-garden full of flowers, and the roads had all been beaten out by the invading flocks of nomad shepherds. On the 2nd August we crossed the Hampta pass ; it was unrecognizable. There was hardly a drift of snow remaining, where a few weeks before we had cut steps. Kulu was a void of mist and cloud. We plunged down into the Monsoon.

TRAILL'S PASS, 1925.

HUGH RUTTLEDGE.

AN ACCOUNT of an attempt made to cross this pass in 1925 may be of some interest to mountaineers, if for no other reason than that it illustrates the necessity for reconnaissance. The successful crossing in August 1926, has been fully described by Brigadier R. C. Wilson in the *Alpine Journal*, Vol. XL, No. 236, May 1928, pp. 33 *sqq.*

Traill's pass lies in the main chain of the Kumaun Himalaya, between Nanda Devi and Nanda Kot, at the head of the Pindari

glacier.* The latter is so easy of access that the pass is likely to attract climbers, but it should not be attempted by any but a well-equipped and experienced party. A good account of its history may be found in the late Mr. A. L. Mumm's delightful book, *Five Months in the Himalaya*. The old survey map indicates a route over the west shoulder of Nanda Kot, to the east of the true pass; this may be due to a belief, attributed to Traill, who made the first recorded crossing in 1830, that he had reached a height of 20,000 feet. In fact, the west shoulder of Nanda Kot is unclimbable; and the height of the actual pass is about 17,700 feet.

In 1925 a party consisting of Brigadier Wilson, Major T. C. Carfrae, and the writer and his wife reconnoitred the pass, a procedure rendered necessary by the fact that none of the previous three successful parties had left a detailed account of their doings; moreover, the last crossing had been in 1861. Enquiry among the Danpuria hillmen of Loharkhet elicited discouraging statements that the pass had become impassable, owing to the retreat of the Pindari glacier; but several men volunteered to assist the reconnaissance, as porters or as well-wishers, the latter including the *malguzar* Ratan Singh, whose grandfather went over in 1861. Two Johar Bhotias, who had made a sporting attempt to cross from the north a year or two before, had already joined us at Almora.

Camp was pitched on 31st May under the left lateral moraine of the Pindari glacier, and on the same afternoon Wilson and I made a voyage of discovery to the upper end of the moraine and thence round a rock rib descending from Nanda Kot, to the more or less level ice between the two icefalls, at a height of about 14,500 feet. Here we found a good deal of new snow, and many crevasses. On the other side we could see what was probably the cave mentioned by the Schlagintweits and Colonel Smythe, in 1856 and 1861; and we were much interested to observe distinct traces on the opposite mountain side of the three-foot path constructed in 1830 by Traill, in those halcyon days of authority and cheap labour. Obviously, therefore, the glacier must be crossed; and in any case further progress up the left bank presented great difficulties. But the new snow and numerous crevasses indicated that an alternative route to the other side was to be preferred, if the porters were to be got any further; and we found

* Nanda Devi falls in one-inch map 53N/15; Nanda Kot in 62B/3. The maps are still in their old hachured form and are from very old reconnaissance surveys.

that there was dry ice, less crevassed, below the lower icefall and leading to a rock gully which looked climbable.

Next morning the gully was reached by the whole party with ease. Access to it was obtained up a snow fan, somewhat liable to be raked by seracs from the icefall, while the gully itself was a suitable funnel for falling stones. But all went well; the cave was reached and passed, and the remains of Traill's "path" permitted fairly rapid progress to the snow-line, then at about 16,000 feet. Sunset found us on an outcrop of rock at about 16,500 feet, where a platform was rapidly constructed and shelter found for all. Just before the light failed, the Bhotias, casting round for amusement, announced blandly that a party was coming down the upper icefall, from the direction of the pass. Sceptical examination with the binoculars revealed the "party" as a bunch of healthy seracs at least 50 feet high and still quite stable.

Morning disclosed two unhappy facts: Carfrae was far from well and was unlikely to recover his form at that altitude; and most of the porters, and all the well-wishers but one, were obviously frightened by the close proximity of Nanda Devi and the obstacles in front. Superstition, which nearly wrecked the plans of our predecessors, is still potent in this neighbourhood.

Reluctantly it was decided that Carfrae should return to the moraine base-camp with the doubting Thomases, leaving us just enough men to get over with, should the passage "go." He would wait one day, and if we did not return would assume that we had succeeded, and would go round via the Gori valley to meet us at Martoli. My wife undertook to overhaul supplies while Wilson and I, with the two Bhotias and the best Danpuria, set off to reconnoitre higher, the pass being invisible from our camp. We selected a likely rib skirting the upper icefall, and after a little step-cutting reached a col at about 17,400 feet. It is almost certain that from this point, which we have marked with a cairn, our predecessors were able to attain the comparatively flat névé of the upper glacier, leading direct to the pass. The retreat of the glacier has, however, cut off all access to the névé from here, and it would have taken days to cut down and across a slope of ice and up the fall. The only alternative was to climb a rock face some 800 feet high, part of the great shelf descending from A59 (21,624 feet), or traverse round a corner where it fell to the glacier. Bearing N.W. across easy slopes, and crossing a small rimaye, we effected a lodgment on the cliff, which is loose and very steep. The obvious difficulties higher up, and the incessant falling stones, inclined us to

try for the corner, but eventually a snowstorm compelled retreat and we made all speed back to camp, leaving the problem still unsolved. This was a blessing in disguise, for in the successful crossing next year from the north, with better porters, we were obliged to descend the cliff, and are of opinion that, with the porters available in 1925, an accident might have occurred had we persisted. Actually, the cliff affords the only way, and it will always be dangerous, owing to the angle and extreme looseness of the face.

From the top, at a height of over 18,000 feet, the pass is visible and is easily attainable between two systems of crevasses which have not yet united but may do so before very long.

The north side is steep everywhere, but it is possible that an easier route than ours of 1926 exists to the west, and parties might investigate this.

THE WORD HIMALAYA.

SIR GEOFFREY CORBETT.

THE WORD Himalaya is derived from two Sanskrit words,—“Hi-ma,” snow, and “ā-la-ya,” abode ; and it means *The Abode of Snow*. Words similarly formed and similarly pronounced are “Devālaya,” *Abode of God* and “Shivālaya,” *Abode of Shiva*. In northern India, Himalaya denotes the whole range,—or rather ranges,—stretching from Chitral to Assam, “like a measuring rod of the earth.” But in Nepal and east of Nepal, each group of snow-covered peaks is called Himāla or Himāl, which is a contraction of Himalaya, and a separate name is given to the group rather than to the individual peak. Thus Brigadier E. A. Tandy, late Surveyor General of India, says that the Everest group is called Mahā Langūir Himāl in Nepal, and that Mount Everest itself has no Nepalese name. Similarly Colonel Ganesh Bahadur Chattari, who directed the recent survey operations in Nepal, considers that the Tibetan name Chomolangma is applied generally to the whole Everest group or Himāl, and not particularly to the highest peak.

The common Anglicised pronunciation is Himālayā. But in recent years there has been a tendency among superior folk to say Hīmāliyā or Hīmāliyā. I happened last year to be a member of a committee of the Indian legislature which included representatives from all parts of India, and we suspended work one morning to discuss the right pronunciation of the word from which the Club takes

its name. There was considerable argument and divergence of opinion, which I should summarize thus :—

Northern India	..	{ (1) Hindi—Himālay.
		{ (2) Urdu—Himāleeya.
Bengal	..	Himāla or Himāl.
Southern India	..	Himāliya.

Colonel C. L. Peart, Adviser in Languages and Secretary to the Board of Examiners at Army Headquarters, was good enough to go into the question, and he has sent the following note :—

“ There is no doubt that Tibetans and Hindi and Urdu-speaking Indians all pronounce the first ‘ a ’ long, though the last named stress it more than the first two.

“ The real difficulty lies in the transliteration of the last two syllables. Several Tibetans questioned by the Indian Member of the Board pronounced the word as ‘ Himāliye,’ passing quickly over the ‘ i.’ Hindus pronounce it ‘ Himālai ’ and ‘ Himālay.’ It will be noticed that these renderings have the effect of making all the syllables of the word almost of the same length. The Muhammadan rendering is ‘ Himāliya ’ and less frequently ‘ Himāla.’ These renderings have the support of the standard Urdu dictionary, the *Farhang-i-Asafia*.

“ The rendering given by Platts and other authorities, ‘ Himālaya,’ can only be supported if it is read in the Hindi or Sanskrit way, that is, Himālāy-ā, the final soft ‘ a ’ being the sound that follows many final consonants in Sanskrit. Read in any other way, say under the Hunterian system or the Army system, the word would read Himālāyā, which of course is wrong.

“ Platts’ rendering, if read in the Hindi way, is probably the correct way of writing and pronouncing the word and is the same as the commoner Tibetan and Hindu pronunciations given above. The difficulty of writing the word so as to ensure that the last two syllables are pronounced in the Hindi way is overcome for us by the fact that English people already pronounce these two syllables almost in that way.

“ That we should follow Tibetans and Hindus in their renderings and not the Muhammadans is only reasonable, as the former are the inhabitants, and therefore have presumably the proper pronunciation of the name. If that is so, it only remains for the Survey of India to bring the English pronunciation into line with the Hindi pronunciation as given by Platts and others, by placing an accent over the first ‘ a ’ of the word as already written in English, i.e., ‘ Himālaya.’

“Under our present Army system the word would be written ‘Himálea,’ which is an excellent rendering but would, no doubt, be violently assailed.”

I showed Colonel Peart’s note to Professor A. B. Dhruva, Pro-Vice-Chancellor and Professor of Sanskrit at Benares Hindu University. He writes :—

“‘Himáliya,’ with the accent on the second syllable, is said to be the authorized Urdu or Muhammadan pronunciation, and the pronunciation is correct so far as the accent is concerned, which in Sanskrit and Hindi also is on the second syllable. But the Urdu pronunciation is defective in so far as it slurs over the vowel *a* between *l* and *y*.

“The Tibetan ‘Himāliye’ is a corruption of the Sanskrit ‘Himālaya,’ the *a* on each side of *y* being changed into *i* and *e* according to well-known laws of sound and change. The Muhammadan ‘himāliya’ nearly corresponds to the Tibetan ‘Himāliye, and ‘Himāla’ is the contraction of ‘aya’ into one syllable. The omission of *a* after *l* in some mouths is due to the absence of accent on the third and fourth syllables.

“In the Sanskrit pronunciation the accent falls on the second syllable, with a slight accent on the final soft *a*, just so much as is required to pronounce it distinctly. Since Hindi and other modern Indian languages do not require the final *a* to be pronounced distinctly or even indistinctly, there is only one accent, and it is on the second syllable.”

The sum of it all is that Himalaya is a Sanskrit word, and there is no doubt about the correct Sanskrit pronunciation. The English equivalents of the vowel sounds are these—

Hi-	as in “him”
-mā-	as in “father.”
-la- -ya }	as in “fur” or French “le.”

In modern Hindi the final -a is ordinarily not sounded, and the word is pronounced Hi-mā-lay.

I have reached this conclusion with the help of Pandit Madan Mohan Malaviya and Pandit Brijlal Nehru, who assure me that it is correct.

HIMALAYAN EXPEDITIONS.

ADMIRAL LYNES' ORNITHOLOGICAL EXPEDITION TO KASHMIR,
1928.

THIS EXPEDITION was organized by Rear-Admiral Hubert Lynes, C.B., C.M.G., with the object of studying the distribution and habits of Kashmir birds, and to gain material for the monograph which is being prepared by Mr. Hugh Whistler. Mr. B. B. Osmaston, late of the Indian Forest Service, a well-known ornithologist, as well as Mr. Whistler, was fortunately able to accompany the expedition, and Admiral Lynes was able, through the courtesy of the Bombay Natural History Society, to send Mr. V. S. La Personne to investigate certain problems dealing with the avifauna of Gilgit.

The expedition left England on the 22nd March, and arrived in Srinagar on the 9th April. After ten days' halt here to collect staff and stores, a start was made for the Lolab, via the Wular lake. In the Lolab a grave loss befell the expedition. Medical and family reasons unfortunately compelled the leader, Admiral Lynes, to leave hurriedly for England on the 27th. At his wish, however, Osmaston and Whistler carried on with the programme.

From the Lolab the party travelled by Lake Manasbal, and up the Sind valley to the Zoji La, which they crossed on the 23rd May. Heavy snowfall and numerous avalanches had been a feature of the late winter, and snow still lay to about five miles below Matayan. The Treaty Road was now followed to Khalatse on the Indus. It had been particularly desired to reach the Ringdom Gonpa at the head of the Suru valley by the end of June, as various interesting birds breed in the marshes below the monastery. The road from Bod Kharbu over the Kungi La, approximately 16,000 feet, was still impassable and an alternative but little-known and difficult route through Zaskar was followed, by which the Gonpa was reached on the 27th June. Five days were now devoted to the birds of the marshes.

From Ringdom the ordinary route was followed down the Suru valley to Kargil. There it was decided to visit the plains of Deosai, by the valley of the Shingo-Shigar. From an ornithological point of view the Deosai proved somewhat disappointing, while the mosquitoes made life a burden and work almost impossible.

The return march was made by the Skardu route to Burzil Chauki, which was reached on the 26th July. From here it was easy going down the valley of the Kishanganga to Gurais, where La Personne arrived fresh from his three months' trip to Gilgit. Osmaston and

Whistler eventually reached Srinagar on the 6th August, and after devoting a few days to the marshes of the Kashmir valley, left Kashmir on the 14th.

On this expedition a large collection of skins was made, consisting of 700 birds obtained by Osmaston and Whistler, and 450 by La Personne. The former also collected about 450 eggs. Osmaston made an extensive collection of flowers and plants to illustrate the flora of Ladakh, and a mass of field-notes on the birds was also obtained. The whole of the ornithological specimens have been most generously presented by Admiral Lynes to Whistler, for use in the preparation of his book on the *Birds of Kashmir*, on which the latter is already engaged.

THE ITALIAN EXPEDITIONS TO THE KARAKORAM, 1928-29.

IN THE AUTUMN of 1927 the Milan section of the Club Alpino Italiano made plans for an expedition to the Baltoro glacier in 1929. Under the auspices of this club and of the Royal Italian Geographical Society and under the immediate leadership of H.R.H. the Duke of Spoleto, the main party will attempt to cross the Muztagh-Karakoram watershed, east of Golden Throne or north of Broad Peak, to the Urdok or Gasherbrum glaciers. From here it is hoped to reach the Shaksgam valley, where the survey of the last remaining gap will be completed, together with its tributary glaciers. By following the route taken by Sir Francis Younghusband in 1887, it is proposed to return to the Baltoro glacier by the Muztagh pass.

In the summer of 1928, the Duke of Spoleto organized a preliminary expedition to Baltistan to collect and store supplies at Askole, the furthest village up the Braldoh, and not far from the snout of the Baltoro glacier. The members of the preliminary venture, besides the Duke, were Commander Mario Cugia, of the Royal Italian Navy, and Dr. Umberto Balestreri, late Secretary of the Club Alpino Italiano. Mr. S. W. Steane, who had recently retired from the Kashmir Forest Service, was employed by the Duke to superintend the transport arrangements.

The Duke and Commander Cugia paid a short visit to Simla during June, where the Himalayan Club, of which both are Founder Members, placed all available information at their disposal. In early July the party, including Dr. Balestreri, left Srinagar, and taking the route over the Deosai plains, formed the depot at Askole without much difficulty. A month later they left Askole for Srinagar, via the Skoro La, Skardu, the Indus valley, and the Zoji La.

On the 10th August, during the return journey, Dr. Balestreri climbed the rocky peak, Cheri Chor, which rises to the west of the Skoro La. Brief details of this climb are given below :—

Dr. Balestreri left the Skoro La route about 500 feet below the pass on the north side at 11 A.M., and ascended westwards a steep gully filled with debris, though still partially under snow. This gully led directly to a snow col on the north arête, about 1,200 to 1,300 feet above the start and some 300 to 350 feet below the summit of Cheri Chor. It was, however, dangerous owing to falling stones, and Dr. Balestreri had, therefore, to scale the rocks on its left side to a point three-quarters of the way up, where the gully narrowed to an ice couloir. From here he reached at 12-30 the col on the north arête, partly by cutting steps in the ice, and partly by climbing the rocks on the right. From the col the route generally followed the north arête. Fresh snow covering the rocks, and two large slabs of rock with few handholds caused a good deal of trouble, but the summit was reached at 1-15 P.M. by a slight detour to the east in the last stage of the climb. The total climb of from 1,500 to 1,700 feet occupied $2\frac{1}{4}$ hours including short halts. The descent by the same route took a little over an hour, the slabs being much more difficult, but the couloir easier.

Schlagintweit in 1856 was probably the first European to cross the Skoro La, while Godwin Austen in 1861 was certainly the first to fix its position with any accuracy. His rough reconnaissance surveys are still the basis of the map of this region, though the Workmans made a small but probably correct alteration in the lie of the glaciers by the peak Mango Gusor.

Godwin Austen, however, did not fix the height of the Skoro La ; and subsequent travellers disagree. In 1892 Sir Martin Conway put it at 17,400 feet. In 1899 the Workmans found it 16,800 feet by a Watkin aneroid and 17,000 feet by a Carey. In 1902 Guillardmod made it 17,716 feet, while Sir Filippo De Filippi in 1909 made it only 16,700 feet by mercury barometer. It is therefore not yet possible to decide, though probably 16,800 feet is not far wrong. If this is so, Cheri Chor would be from 17,800 to 18,000 feet.

It is believed that Dr. Balestreri is the first to ascend this peak. Godwin Austen's records are scanty ; Sir Martin Conway and General Bruce certainly did not climb it ; while if the Workmans had done so they would undoubtedly have said so in their book.*

* For a brief note on the Workmans' climbs in this region, see *Himalayan Notes*, p. 105.

The members of the Italian expedition for this year arrived in India in February and March and left Srinagar in three parties on the 27th and 30th March, and the 3rd April. It is organized as follows: H. R. H. the Duke of Spoleto (leader), Commander Mario Cugia (2nd in command), Signor Umberto Balestreri (in charge of the climbing and caravan), Lt.-Col. Gino Allegri (medical officer), Giuseppe Chiardola (topographer), Vittorio Ponti, Prof. Ardito Desio, and Prof. Lodovico Di Caporiacco. There are also a cinematographer, a wireless operator, and two experienced Courmayeur guides, Evaristo Croux and Leone Bron. Various scientific operations including magnetic and pendulum observations, will be carried out in the Karakoram.

DR. EMIL TRINKLER'S CENTRAL ASIAN EXPEDITION, 1927-28.

THE EXPEDITION organized in 1927 by DR. TRINKLER to investigate the geography and geology of the Western K'un-lun and Western Takla-makan, returned to Leh on the 17th August, 1928, after an absence of a little over a year.

The route chosen was over the Lingzi-tang and Aksai-chin plateaux of north-eastern Ladakh, at right angles to the strike of the mountains. From here the members intended to explore the geology and glaciology of the upper Keriya-darya district. They then hoped to follow the tracks of Sir Aurel Stein and Prjevalsky to the Tarim basin in order to gain a comprehensive idea of the Ice-Age in this region. In this district Dr. Trinkler and Dr. de Terra set themselves three investigations: (a) the study of the geological structure of the western K'un-lun, (b) the orography and geology of the Mazar-tagh, that curious half-buried mountain-range which was supposed to cross the Takla-makan from Maral-bashi to the Khotan-darya, and (c) the origin of the great Takla-makan desert itself. Trinkler considered that existing evidence signified that the remnants of great inland lakes underlie the present dune-area, but that the date of those lakes was doubtful, though it was probable that the conditions in the Tarim basin were analogous to those in Russian Turkistan.

The expedition was led by Dr. Trinkler, whose special study was the geography and archæology of the regions traversed; Dr. de Terra undertook the geological investigation and Monsieur Bosshard devoted himself to photographic, cinematographic and botanical work. They left Leh on the 12th July with a caravan of 2 Indian servants, 10 coolies, 10 horses, 31 yaks, and 70 transport sheep. By the end of the month they reached Phobrang, the last Ladakhi settlement, some

six miles north of the western end of the Pangong Lake. From here the route led over the Marsimik and Lanak passes to the Lingzi-tang plateau, where the trouble began. First the riding ponies strayed and were lost; then the yaks began to fail, one or two animals dying every day. Post-mortem examination showed that they were suffering from small worms, probably caused by the bad water and lack of good grass. In spite of every precaution the losses continued, and only 11 yaks remained alive when the expedition reached the big salt-lake in latitude $35^{\circ}10'$, longitude $79^{\circ}50'$. The Kerya-darya part of the programme had, therefore, to be cut out for the present and the party had to march in a general north-west direction towards the upper Kara-kash. Near the big salt-marshes south of the Khitai-dawan, the expedition struck Sir Aurel Stein's route of 1908, and followed it down the Kara-kash where fresh transport and provisions were obtained from friendly Kirghiz. Suget Karaul, whose "fort" was garrisoned by a single Chinese soldier and a solitary customs official, was reached on the 7th October.

Dr. Trinkler writes in the highest terms of his transport sheep, only two or three of which died during the desolate march across the high plateaux. There is no doubt that sheep form the most suitable form of transport for these barren regions, though Deasy was unfortunate in not selecting the right type of animal. Captain Biddulph during the Forsyth Mission of 1873 relied almost exclusively on them and found them excellent. Two men only are required to look after 70 sheep, each of which can carry a load of 20 to 30 lbs., and a sheep can work without grass or water longer than a pack pony or yak.

Owing to the slow progress across the plateaux, Dr. Trinkler was able to make a very thorough exploration of the Aksai-chin, the existing maps of which, based on very rough reconnaissances in the 'sixties of last century, were found to be rather unreliable. Dr. Trinkler's surveys were, it is believed, carried out on a scale of 1 : 100,000, and it is to be hoped that the material will soon be available for incorporation in Survey of India maps. Dr. de Terra made a geological survey along the route, and has been able to combine his results with those of Stoliczka, the talented geologist who accompanied the Forsyth Mission to Kashgar.

The expedition having reached Kashgar early in December set out in two parties for the Western Takla-makan and the K'un-lun, where it studied the geological history of these regions, especially the origin of the great desert itself, and its recent history. Fresh

evidence was obtained of climatic change during the historical period, and a thorough geological study was made of the Mazar-tagh, both in the neighbourhood of Maral-bashi, and also at its eastern termination on the Khotan-darya. Though the expedition was purely scientific, and no topographical survey was carried out in Chinese territory, the party met with a good deal of suspicion and obstruction. It returned to Kashgar at the end of May, 1928, and left on the 2nd July for India via the Kilian-dawan and Karakoram pass, Mons. Bosshard returning direct to Europe by way of Russia with all the heavy baggage.

Detailed reports of the expedition are not yet available. It is to be hoped that when they are, a British publisher may be found with sufficient enterprise to let us have an account of them in the English language. In the meanwhile it may not be out of place to give a brief résumé of Dr. Trinkler's results. He considers that during the Ice-Age the whole high plateau region of western Tibet and eastern Ladakh, together with the Karakoram and K'un-lun, was buried under an enormous ice-cap, much as is the Spitzbergen of to-day. The great glaciers extending from this cap have left their moraines in the lower parts of all the K'un-lun valleys as well as in the upper tributaries of the Indus. On every hand, traces of former glaciation can be seen, roches moutonnées, striated erratic boulders and rocks, thick glacial gravel-deposits. These last stretch along the northern slopes of the K'un-lun, even to the edge of the Takla-makan itself, where they merge into the clay-terraces. As the great ice-cap melted, mighty rivers rushed down to the plains of India and Turkistan, inundating large areas of these countries. The Tarim basin thus became filled with a big inland lake. Then the supply of water diminished and the sands, carried by the prevalent north-east winds, accumulated and encroached.

The problem however is not quite so simple as this. Dr. Trinkler considers that there have been more than one climatic pulsation during historical times. At several places he came upon stretches of bare clay-terraces, containing numerous shells of fresh-water snails. Dead poplars embedded in the clay prove that the inundation depositing the clay took place when the trees were already dead. As we know from the old ruined sites that as early as the 3rd to the 8th century A.D. the poplars were not yet dead, the last big inundation must have taken place after that date. In certain dry valleys, scooped out by wind-erosion in the desert, a five-fold alternation of sand and clay could be observed, while near Khotan the culture-stratas of the

early centuries of our era were buried beneath the uppermost layer of clay.

Dr. Trinkler also succeeded in doing some archæological exploration. He discovered an ancient ruined site north of Pialma (between Yarkand and Khotan) where he found the remains of small Buddhist shrines belonging probably to the same period as the big Rawak Stupa north of Khotan. In this last-named ruin, he cleared the outer wall of the south-western gallery surrounding the Stupa tower, where he found life-size Buddhist statues in Gandhara style similar to those excavated by Sir Aurel Stein in 1900.

During the expedition Dr. de Terra carried out much useful geological survey. He investigated specially the age of the upfolding of the Karakoram and K'un-lun ranges as well as their structure. Marine and plant fossils were found both in the K'un-lun and north-east Ladakh. Monsieur Bosshard is said to have taken many interesting photographs as well as a cinema film. The detailed results of the expedition will be awaited with much interest.

DR. WM. FILCHNER'S CENTRAL ASIAN EXPEDITION OF 1926-28.

DR. FILCHNER's name is well known as that of a persevering and determined explorer who has achieved important results in Central Asia and other little-frequented parts of the world. It may be recalled that, while a subaltern in the Bavarian Army, Lieut. Filchner first set himself the task of exploring the still unknown regions of Inner Asia. His first journey on the Pamirs was described in a book published in 1903.* A year later accompanied by a geologist, Dr. Tafel, he undertook a more adventurous expedition to the upper waters of the Hwang-ho and the little-known regions on the Sino-Tibetan borderland. This journey resulted in a valuable series of maps. Between 1911 and 1913 Dr. Filchner was occupied in oceanographical observations on board a German ship working in the Atlantic Ocean. He also served for several years in the Topographical department of the German general staff, and his services include expeditions to Spitsbergen and to the Antarctic. He has a number of books of geographical interest to his credit, and a volume of magnetic and astronomical results published in 1915 earned him the degree of Doctor (*honoris causa*) of Königsberg University.

The following brief account of Dr. Filchner's latest expedition may be of interest, pending the publication of his complete results. Dr. Filchner's interests are scientific and geographical rather than

* *Ein Ritt über den Pamir* von Wm. Filchner ; Berlin, 1903.

political, and the primary object of his latest expedition was to fill in some of the many gaps in the magnetic surveys of Central Asia. During a considerable portion of his journey Dr. Filchner was unaccompanied by any other European ; he appears to have travelled very lightly and to have relied largely for his subsistence on such food supplies as were locally obtainable ; he suffered considerably from cold and sickness, aggravated doubtless by the uncompromising attitude of the Tibetans.

Starting early in January 1926 and travelling via Leningrad, Moscow and Tashkent, Dr. Filchner entered Sinkiang (Chinese Turkistan) at Kulja.* Thence his route lay through Manas, Urumchi and Hami ; across the Gobi desert to Anhsi ; thence via Suchow, Liangchow, Pingfan and Sining to Kumbum near Koko Nor. Here, on the Sino-Tibetan border, he spent the winter of 1926-27, and got into touch with Marshal Feng of the Chinese ' Red ' Army, and General Ma, the Chinese Governor of Koko Nor. Ninety-five magnetic stations of observation were established between Tashkent observatory and Koko Nor, and Dr. Filchner had planned a parallel line of observations to extend across the magnetically-unknown region from Koko Nor to Kashgar. But at Koko Nor an opportunity presented itself of joining forces with two European travellers, Messrs. Plymire and Mathewson, who were making for Shigatse ; the latter being a member of the China Inland Mission whose knowledge of the Tibetan language subsequently proved invaluable ; funds and provisions being short the three decided to travel together.

Armed with a passport from the energetic General Ma, the party left Koko Nor in May 1927, and travelled west and south-west, following more or less the routes of Prjevalski (1870-73) and Welby (1896) until they joined A. K.'s south-north route of 1879-80 in the neighbourhood of the Maren Ussa tributary of the Yangtse river. Following the latter route southwards across the uninhabited Chang-tang, Nakchuka (150 miles N. of Lhasa) was reached on 10th September. Here the road to Lhasa and Shigatse was found to be barred by the Tibetans, and the expedition was compelled to turn westwards and make for Ladakh.

The next 300 miles lay mostly through the district of Naktsang which was mapped on the $\frac{1}{4}$ -inch scale by Surveyor Gujjar Singh who accompanied Sir Henry Hayden's expedition in 1922.† Westward

* Dr. Filchner's route is shown on the sketch-map at the end of this volume.

† The travellers were not aware of this fact at the time,—Sir Henry Hayden's posthumous volume (*Sport and Travel in the Highlands of Tibet*), reviewed on p. 108, having only appeared in 1927.

however, of the 86th meridian, a new and interesting line was taken as far as Gartok. This line ran parallel to, and to the south of, Nain Singh's route of 1873-75, and well to the north of Ryder and Rawling's journey of 1904. The only previous European traveller in this area is Sven Hedin, whose route (of 1906) was touched two or three times south and west of lake Ngangla Ringtso.

Gartok was reached on 1st February, 1928, and Leh a fortnight later. Here the party broke up; Dr. Filchner subsequently spent six weeks at the Geodetic Branch Office of the Survey of India at Dehra Dun standardizing his magnetic instruments against those of the Dehra observatory and roughly plotting his route on the 1/M sheets of India and Adjacent Countries. His final results, which are now being compiled in Berlin, will be awaited with very great interest.

It is interesting to note that Dr. Filchner is planning a further expedition in 1930, when he hopes for permission to extend his magnetic observations and geographical explorations in the little-known areas of south-east Tibet and the headwaters of the Salween. We wish him every success.

PEKING TO LONDON BY CAR.

IN 1927 CAPTAIN D. MCCALLUM, of the East Yorkshire Regiment, and, at that time, Commandant of the British Legation Guard in Peking, had prepared to undertake, accompanied by his wife, an expedition by motor car from Peking to London. Starting by way of Mongolia and the Gobi Desert to Kashgar and Yarkand, it was intended at the latter place to dismantle the two cars and convey them by pack-animal across the Himalaya by the Karakoram route to Leh and Srinagar. In Kashmir the cars were to be reassembled and the journey to be continued to England via the North-West Frontier of India, Quetta, Duzdap, Meshed, Tehran, Baghdad, Damascus, Aleppo, Konia, Constantinople, Sofia, Bucharest and Budapest to England.

After eighteen months' work and every conceivable kind of setback and delay, the McCallums had their organization completed, petrol dumps established in the Gobi and in Turkistan, and the expedition was ready to start by the spring of 1927. The sudden anti-foreign turn of the political situation in China then compelled them to cancel that part of their journey across the interior of China. U.S.S.R. territory being denied to him for obvious reasons, Captain McCallum at once decided to try the only remaining probable route, that from South China through Indo-China, Siam and Burma into

India, where he hoped to join up with his previously-planned route in Kashmir.

After further delays the start was eventually made on the 12th June, 1927, from Peking. The expedition proceeded by road to Tientsin in two Buick cars. Owing to the disturbed political situation in China the cars had to be shipped from Tientsin to Haiphong in Northern Indo-China, from which port they penetrated by road into Southern China (Kwangsi Province) at the "Porte de Chine". From the "Porte de Chine" the journey was continued southwards through Tonking, Annam and Cochinchina to Cambodia and the famous Khmer Ruins of Angkor; and from Cambodia into Siam, where recourse had to be made to the railway, owing to the whole of the low-lying country of Central Siam being under water. From Bangkok it was intended to proceed northwards into the Southern Shan States of Burma at Kengtung, and from there westward to Mandalay, and thence via Manipur into Assam, and to Calcutta. Again owing to floods, the attempt to proceed by this route into India was rendered impracticable. A digression was therefore made from Bangkok into Malaya, whence the cars had to travel by boat from Penang to Calcutta.

From Calcutta the party proceeded along the Grand Trunk Road to Delhi and Lahore, thence into Kashmir by the Banihal pass. Leaving Kashmir by the Abbottabad route the expedition continued to Peshawar and the Khyber pass, thence along the North-West Frontier via Bannu, Dera Ismail Khan and Dera Ghazi Khan to Fort Munro, Loralai and Quetta. From Quetta they had a most successful run to Duzdap in south-eastern Persia. From this point the original itinerary was followed across Persia, Iraq, Syria and Anatolia to Europe.

The expedition finally reached London on the 29th May, 1928, after many delays owing to heavy rains in south-eastern Asia, snow in western Asia, and earthquakes in Bulgaria; 15,200 miles of the journey having been completed by car.

MINOR HIMALAYAN TRAVELS.

BROOKE, MAJOR A. S.—During months July to September 1928, Major A. S. Brooke, 1-18 Royal Garhwal Rifles travelled into south-eastern Ladakh for shooting. From Leh, which he reached by the Treaty Road, he travelled up the Indus valley to Upshi, and thence over the ordinary route by the Tagalaung La, 17,500 feet, and Polakonka La, 16,600 feet, back to the Indus river at Nima Mad.

From here he crossed by the Sangpoche La, into the Hanle valley, in the tributaries of which he had good sport. He afterwards crossed the Lungmar La to Nima Mad, whence he returned to Leh and Srinagar by his outward route.

Major Brooke notes that the ferry across the Indus at Nima Mad cannot cross the river in a strong wind, when the water is too deep to wade. By 16th August, 1928, it was possible to ford the Indus here in the morning; the ford is generally impassable from May till August in a normal year. The route by the Lungmar La is preferable to that by the Sangpoche La in August, when the mosquitoes are exceedingly vicious in the lower Hanle valley.

Major Brooke's bag included : 1 ammon (*Ovis Hodgsoni*), 2 shapu (*Ovis Vignei*), 4 burrhel (*Ovis Nakura*), 1 Tibetan gazelle (*Gazella Picticaudata*), and 1 Kashmir stag (*Cervus Cashmirianus*).

DAVIES, Lieut. J. A.—In April and May 1928, Lieuts. J. A. Davies, R.E., and E. E. N. Sandeman, R.E., travelled via Gangtok and the Chumbi valley to Gyangtse, and via Lachen to the Lhamo lake. The routes are of course well known, but the following notes are of interest.

Gyangtse was reached in ten days from Gangtok, including a day's halt at Yatung. The marches Marponang-Changu-Champitang (33 miles), Tuna-Dochen-Kala (25 miles), and Kangma-Sadong-Gyangtse (28 miles), were doubled. The total distance to Gyangtse is 183 miles. The first of these double marches includes the passage of the Nathu La, 14,400 feet, and is not recommended for an unacclimatized party.

No shooting is allowed in Tibet. A shooting licence can be obtained for Sikkim, for burrhel, etc., and under certain circumstances ammon. These are obtainable in Northern Sikkim, and few men go there to shoot. Fuel is a difficulty, yak-dung being practically the only supply. Bungalows are available along the route to Gyangtse, and also as far as Thangu on the Donkya La route.

GLOVER, H. M.—In June 1928, Mr. H. M. Glover, of the Indian Forest Service, toured in the Tidong* valley of Bashahr State, Simla District, and with his wife crossed the Charang pass over the Central Himalayan Range, height 17,600 feet, to the Baspa valley. This route circles the Lesser Kailas, and according to Hindu tradition is an expiation for all previous sins of omission and commission.

* The Tidong valley is shown on the old atlas sheet as *Todoong Gar*. The Punjab States *Gazetteer* gives it as *Tinang*. The spelling *Tidong* is that used in the Forest Divisional Records.

There was a large accumulation of snow but the surface was good. The weather was perfect and magnificent views of the glaciers and high peaks were obtained. It is hoped to publish an account of this journey in the next number of *The Himalayan Journal*.

MONEY, Major G. W. P.—In August 1928, Major Money travelled from Almora up the Dhaulī river to Malari, and crossed the Chor Hoti pass to Rimkin and Bara Hoti. He returned by the Damjan pass and Niti. Major Money does not consider the Damjan pass (16,400 feet approx.) as difficult as the Chor Hoti, which is unanimously looked on by the local people as the more treacherous. Eight Bhotias are reported to have been killed by falling rocks in September 1927; and half an hour after Major Money crossed, in mid-August 1928, a blizzard caused a serious rock-fall, fortunately without causing any casualties.

SHERRIF, Lieut. G.—In September and October, 1928, Lieut. G. Sherriff, R.A., travelled from Kashgar to the Tekkes valley. This journey may be divided into three stages: (a) Kashgar to Aksu, approx. 300 miles; (b) Aksu to Shotta, in the west end of the Tekkes valley, via the Muzart Dawan, approx. 150 miles, and (c) from Shotta to the upper Koksū valley, via the Kurdai Dawan, approx. 140 miles.

There are two main routes between Kashgar and Aksu: The winter road through Faizabad and Maral-bashi, which becomes very hot and dusty in summer; and the summer hill-road, via the Yai Dobe plain, the Taushkan river and Uch Turfan. The Muzart pass is open most of the year for laden ponies, and four men live beside the glacier to cut steps at one difficult point. Ismail Bai, who may usually be found at Aksu or Kurghan (2 stages beyond) is always ready to assist travellers and to supply guides. A present should be taken for the Chinese official at Shotta.

Ponies should be engaged for the whole journey from Kashgar. Each pony carries about 200 lbs., and costs about Taels 15 (=Rs. 30) per month. Grain is available as far as Aksu, and a little in the Tekkes valley, but if much is needed, it must be brought four marches from Kulja (Ili). Good tents are essential and should be brought from India. June, July and August are very wet months; after this heavy snowfalls may be experienced. Warm clothes and a good waterproof are necessary.

Flour and sugar can be had as far as Aksu, and at Kulja; vegetables from Kashgar, Aksu and Kulja; oil, matches, candles, Russian soap, rice, pepper, salt, biscuits, raisins, and occasionally some tinned foods and tea, cocoa, coffee, sardines and cigarettes may be had at

Kashgar. Sheep may be obtained almost everywhere as far as the Kurdai Dawan.

The best shooting-grounds lie between Shotta and the upper Koksū. Guides should be taken from the Shotta garrison. Shotta is under Aksu, and the Taoyin of Aksu will usually issue orders to Shotta for any help required. Game consists of wapiti, roe, ibex, sheep, besides small game. The upper Koksū valley seems the best ground for wapiti, the easiest time to shoot them being when they are calling, usually some time between the 15th September and the end of October. Roe are found in the jungles to the south of the road between Shotta and the Kurdai Dawan; ibex in the Agiass valley and upper Koksū; and sheep in the Yulduz valley, three marches beyond the upper Koksū valley to the east, over the Karaghai-tash Dawan. Small game consists of ram-chukor, chukor, partridge, duck, quail, hares, black-game, and, more rarely, bustard and woodcock.

IN MEMORIAM.

ARNOLD LOUIS MUMM.

(1859—1927).

ARNOLD LOUIS MUMM died at sea on the 2nd of December, 1927, on his way back from Japan. Had he lived to reach England he would undoubtedly have been one of the Founder Members of this Club, for a letter of invitation to join it was awaiting him there and his love of the Himalaya and interest in its exploration were such that he would eagerly have accepted. That love and interest will be apparent to every reader of his chief contribution to the literature of mountaineering, *Five Months in the Himalaya*, published by Arnold in 1909. In the preface to that delightful book he tells us that he had "always looked upon those who had visited the Himalaya as the most enviable of mortals," and when the chance came to join Bruce and Longstaff in an assault on Mount Everest he seized it joyfully. But the India Office raised insuperable difficulties and in spite of the goodwill of the Viceroy, Lord Minto—himself a member of the Alpine Club—the expedition to Everest had to be abandoned. The three turned their attention to Garhwal and Kumaun and in April of 1907 set out for an exploration of the approaches to Trisul and Nanda Devi. The result, as all climbers know, was the first ascent of Trisul (23,360

feet) by Dr. Longstaff, and the already mentioned record of their adventures in that region, and later in Kashmir, by Mumm.

Five Months in the Himalaya has indeed a peculiar attraction for the members of the Himalayan Club. Not only is it full of suggestions for further exploration—"I cannot imagine a more fascinating programme for a party arriving at Tapoban as we did, early in May, than to start with the Juma glen, and then when its possibilities were exhausted to devote themselves to a thorough investigation of the peaks or glaciers of the Kosa valley" (p. 149), or see the remarks on the Bagini pass (p. 96)—but it makes sympathetic reference to what was, probably, the first attempt to found a Himalayan Alpine Club. This occurs in the account of the ascent of Trisul. Mumm points out that "the summit of Trisul was then the highest point on the earth's surface which had been reached by man beyond all doubt and controversy." In explaining the latter qualification he refers to the claim made by Mr. W. H. Johnson, one of the officers of the Great Trigonometrical Survey of India, to have ascended a peak in the K'un Lun mountains of the height of 23,890 ft. Mumm inclined with Longstaff (*Alpine Journal*, Vol. XII, p. 58, and Vol. XXIV, p. 133) to believe that "the ascent was actually made as alleged," though the official view was that either Johnson's measurements were wrong or he had mistaken his mountain. That was in 1865, and though we now know that Johnson did not climb this peak, he did endeavour "to start a Himalayan Alpine Club, but received no support and nothing came of the attempt."

Enough has been said to show that Mumm would have been an invaluable and ardent supporter of the Club, and that his book deserves an honourable place in Himalayan literature. Mountaineering and exploration were the main interests of his life. He was in the fortunate position to enjoy them.* The second son of Julius Mumm of the famous champagne firm he inherited a sufficient income to allow him freedom from professional entanglements. At Eton he was distinguished alike for scholarship and eminence in games. At Oxford—he went up to Corpus in 1879—he was exceptional in getting three firsts, in classical Mods., Greats, and Law. Called to the Bar, from Lincoln's Inn, he could have built up a great practice, but as one who knew him well writes in his obituary in the *Alpine Journal* (May 1928) he had "an exceedingly retiring disposition which was coupled

* See also *Geographical Journal*, Vol. LXXI, p. 318, and *The Alpine Journal*, Vol. XL, p. 164.

throughout life with a complete absence of ambition." He found his work as partner in the publishing firm of his relative, Mr. Edward Arnold, where his fastidious taste and sound scholarship were brought into play; his zest for the life of action manifested itself in mountaineering and travel. With characteristic modesty he declared that he was "at no time endowed with a physique or mountaineering powers of an exceptional kind," but the list of his ascents in the Alps from 1873 to 1923—it began and finished with the Titlis—makes one envious: in 1905 he joined Freshfield in an expedition to Africa to the Mountains of the Moon; later in life he climbed and explored in the Canadian Rockies with members of the Canadian Alpine Club. And in all his expeditions his companions testify to his "extraordinary patience and unfailing good temper under discomfort." What better epitaph could a mountaineer desire?

S. G. D.

HIMALAYAN NOTES.

PHOTOGRAPHIC EXHIBITION.

THE FIRST public activity of the Club has been an exhibition of photographs of mountain scenery taken by members. The exhibition was held in Simla during ten days in September in connection with the Simla Fine Arts Exhibition. The Committee of the Exhibition very kindly placed a small room at the disposal of the Club but owing to the uncertainty as to whether any space would be available, only short notice could be given to members of the Club who were known to be interested in photography.

Considering the shortness of the notice, the response was very gratifying and sufficient pictures were received to make a good show. The standard of photography was high and the subjects were of such interest that they were certainly appreciated by the general public that visited the Fine Arts Exhibition. The collection included pictures contributed by Mr. C. P. Skrine, Lieut.-Colonel D. M. Field, Major Kenneth Mason, Mr. Tombazi, Colonel Spalding and Captain K. Dawson. Major Mason also contributed the beautiful little picture of K² by H. R. H. the Duke of the Abruzzi, which appears as frontispiece to this Journal.

Mr. Skrine's photographs, some of the most striking of which were of Rakaposhi, were very effective. Their large size made them particularly suitable for a public exhibition. The gem of the collection

was a view of Rakaposhi taken at dawn, a most difficult subject, magnificently rendered. Mr. Tombazi's contribution included views in the Eastern Himalaya and also some of the Swiss Alps. These were shown separately from the Himalayan subjects. Lieut.-Colonel Field contributed some figure studies from Leh, including an interesting one of a Lama band. These figure studies were welcome as affording a contrast to the other exhibits. Captain K. Dawson showed some effective pictures of hill scenery and one of clouds. Major Mason's pictures which included views of K² and of four giants of the Muztagh from the Aghil Range were of particular interest in view of the lecture that Major Mason had given recently on Himalayan exploration.

Many of the pictures that were shewn have been presented to the Club and will form the nucleus of a collection that should prove very valuable in the future to members who wish to obtain some idea of the appearance of the country that they propose to visit.

It is hoped that in 1929, it may be possible to arrange for a similar exhibition and that by giving longer notice it may be possible to obtain contributions from a much larger number of members and to shew a greater variety of Himalayan subjects. It would assist in the staging of such an exhibition if members would in their spare time prepare a few pictures. For display on the walls of an exhibition, prints smaller than 10×8 are less suitable than those of this size, or larger—the larger the better. The pictures should, if possible, be mounted on stout card considerably bigger than the print; they should not be framed.

W. B. S.

ROYAL GEOGRAPHICAL SOCIETY AWARDS, 1928.—His Majesty the King-Emperor approved the award of the Founder's Medal to DR. T. G. LONGSTAFF, for his discovery of the Siachen Glacier and his long-continued geographical work in the Himalaya.

Dr. Longstaff first visited the Himalaya in 1905, when with the two Brocherels he attempted the ascent of Gurla Mandhata, 25,350 feet. From a camp at 20,000 feet, the party reached a height of 23,000 feet on the western arête of the mountain. From here they were swept away by an avalanche to the glacier 1,000 feet below. They succeeded however in extricating themselves, and camped in the shelter of some rocks near the glacier. This they ascended the following day, and reached a point above 23,000 feet, where they spent another night out in the snow. On the fifth day of the climb,

they made a final effort to reach the summit, but were forced to return from a height of probably a little over 24,000 feet.

Two years later, Dr. Longstaff was back again in the Himalaya, where he successfully climbed Trisul, 23,360 feet, in Garhwal. The ascent of nearly 6,000 feet in $10\frac{1}{2}$ hours at this high altitude on the last day, was the great feature of this climb. As far as we know, Trisul is still the highest *summit* that has been attained. After this expedition Dr. Longstaff was awarded the Gill Memorial by the Royal Geographical Society.

In 1909, Dr. Longstaff reached the upper Siachen glacier and proved it to be the longest glacier outside sub-Polar regions. Ever since its snout was first visited by Henry Strachey in 1848, its great length had been unsuspected. During the Great War, Dr. Longstaff served in the Political Department as Assistant Commandant with the Gilgit Scouts. He was subsequently on the Mount Everest Committee, and went on the Second Mount Everest Expedition in 1922. He revisited Garhwal in 1927, to explore the approaches of Nanda Devi.

Away from the Himalaya, Dr. Longstaff has almost as distinguished a record. In 1903 he visited the Caucasus with L. W. Rolleston, making five first ascents. In 1910-11 he was climbing and exploring in the Canadian Rockies and Selkirks, and visited Yukon territory and Alaska. In 1921 and 1923 he was in Spitzbergen with the Oxford Expeditions and in 1928 took a party of Oxford biologists to West Greenland. In the intervals between these journeys Dr. Longstaff has been a frequent visitor to the Alps. He has been a Member of the Alpine Club since 1900, and was Vice-President of it in 1927.

THE COUNCIL OF THE ROYAL GEOGRAPHICAL SOCIETY awarded the Murchison Grant to Captain C. J. Morris of the 3rd Gurkhas, for his explorations on Mr. H. F. Montagnier's expedition to Hunza. The main results included the exploration of the lower Ghujerab valley and gorge, and of the main glacier tributaries of the Chapursan. Captain Morris was transport officer and assistant photographer on the Second Mount Everest Expedition.

NOTE ON K².—The second highest mountain on earth, a photograph of which appears as frontispiece to this Volume, is not visible from any inhabited spot, and has no native name. In 1856, when Montgomerie was observing from the station of Haramukh, east of the Wular lake in Kashmir, he entered in his angle-book the peaks that

appeared in the direction of the Karakoram, as K^1 , K^2 , K^3 , etc. The surveyors found a local name for K^1 ,—*Masherbrum*, and for K^3 , K^4 , and K^5 —*Gasherbrum*. For K^2 , however, no name could be obtained. Yet when its height was worked out, it was found to exceed the accepted height of Kinchinjunga by 104 feet.

The name *Godwin Austen* was proposed by General Walker in England in 1888, after the distinguished surveyor who first mapped its approaches, but though this name still appears on some unofficial maps, it was not authorized by Godwin Austen himself nor approved by the Survey or Government of India, on the principle that personal names are objectionable. Other native names have been proposed, *Dapsang*, *Chiring*, *Chogo Ri*, *Lanfahad*, etc. : but they are not known to-day by natives, and objection has been raised to all of them. Curiously enough the writer of this note has heard two "native" names used for the peak: *Kechu*, and *Cheku*. These are obviously only corruptions of the symbol K^2 , which, having been now in use for over 70 years, appears to have come to stay.

The officially accepted height is 28,250 feet. This height was deduced by Colonel Montgomerie from the mean of the heights derived from nine stations of observation ranging in height from 16,000 to 17,500 feet and distant from K^2 from 61 to 136 miles. The accepted height of Kinchinjunga is 28,146 feet, but recent investigation points to this height being too low, and it is *just possible* that the day may come when K^2 may have to take third place among the highest mountains of the world.

The Baltoro glacier, at the northern extremity of which rises K^2 , was first discovered by Godwin Austen in 1861 ; it was first reached from the north by Sir Francis Younghusband in 1887, when the northern face of the great mountain was first described. In 1892 the whole glacier was surveyed by Sir Martin Conway. The large northern branch ("the Godwin Austen glacier"), was first visited by a party comprising Messrs. Eckenstein, Crowley and Knowles, and Drs. Pfannl, Wessely and J. J. Guillardmod in 1902. The first serious attempt to climb the peak K^2 was made by H. R. H. the Duke of the Abruzzi in 1909. A complete reconnaissance was made of the mountain from north-west through south to north-east. The Duke reached a point about 21,000 feet on the southern ridge, ascended the snow saddle, 21,870 feet, on the north-west arête, and climbed to an altitude of 21,650 feet on the southern ridge of "Staircase Peak," north-east of K^2 . From this point he took the very beautiful photograph which appears in this volume. The conclusion reached by the expert

GASHERBRUM "BROAD PEAK"		K ²
I. 26,470	II. 26,360	26,400
		28,250



THE SHAKSGAM VALLEY FROM THE EAST.

The Ice-pinnacles of the Kyagar Glacier are from 200 to 300 feet high; K² is 42 miles distant.

Photo, Kenneth Mason.

mountaineers of this expedition is that the technical climbing difficulties are probably insurmountable at so great an altitude.

PRE-GHAL IN WAZIRISTAN.—In the *Geographical Journal* for October 1928 is printed the very interesting lecture delivered by Captain W. R. Hay, dealing with his visit to and ascent of Pre-Ghal, the highest mountain in Waziristan. The statement of the Mahsuds who accompanied Captain Hay, that the Bospa plateau, about 2,000 feet below the summit, is “the highest point on the mountain which any European has previously been allowed to reach” has been corrected by Captain Hay in the *G. J.* for December, where he remarks: “It is quite clear that a party of three British officers, with a number of rank and file of the Indian Army, and some local tribesmen acting as guides reached the summit of Pre-Ghal on 8th May, 1881.”

It appears also from the narrative report of Major T. H. Holdich, R.E. (now Colonel Sir Thomas Holdich, K.C.M.G., K.C.I.E., C.B.), who was in charge of the survey operations in Northern Baluchistan in 1880-81, that the summits of both Pre-Ghal and Shuidar were reached and observed from. In a recent letter Sir Thomas remarks that Captain Gerald Martin, Survey of India (afterwards Assay-Master in the Bombay Mint), was the officer who ascended the peak. Captain Martin was in charge of the survey work with Brigadier-General Kennedy's Column. He was presumably one of the three British officers mentioned by Captain Hay. It would be interesting to know the names of the other two.

THE WORKMANS' CLIMBS NEAR THE SKORO LA, 1899.—With reference to Dr. Balestreri's ascent of Cheri Chor, described on page 89, it may be of interest to mention that in 1899, the Workmans made two ascents in the Skoro La neighbourhood, with Zurbriggen as their guide. There is a photograph opposite page 134 of the Workmans' book, *In the Ice-World of Himalaya*, entitled “*Siegfriedhorn*, 18,600 feet, and Skoro La, 17,000 feet, from Avalanche Camp.” This photograph was taken from the north-east of the Skoro La, and *Siegfriedhorn*, the name given by the Workmans to the broad ice-domed summit east of the pass, is evidently the same mountain for which Dr. Balestreri obtained the native name, Nākpu Gang. The climb to the summit on the 7th August, 1899, took 5½ hours, and is described by Mrs. Bullock Workman on pages 138 *sqq.* of her book. According to her, the height is 18,600 feet, which is probably

approximately correct. A few days later the Workmans climbed a second snow-dome on the watershed, height 19,450 feet. This peak was the fifth furthest east from Nākpu Gang, and is close under Mango Gusor. It has no accepted name.

HAWK MOTHS—The family of Sphingidæ (sphinx or hawk moths) occurring in the Himalaya is not well represented in Home museums or private collections. A great deal remains to be learned about its distribution, habits, etc. Major F. B. Scott, Survey of India, Shillong, Assam, will be very glad to receive specimens of this family from the Himalaya or adjoining regions, and to have them classified. Specimens should be packed in paper envelopes, with the wings folded back to back. The date, place of capture, height, and a serial number should be carefully entered on the envelope containing each specimen.

THE BIRDS OF KASHMIR.—Many members will be interested to learn that Mr. Hugh Whistler is engaged in writing a book on the Birds of Kashmir. His intention is, as far as possible, to write a complete monograph on all birds found within the political boundaries of H. H. the Maharajah of Jammu and Kashmir, including the highly diverse avifaunas of Kashmir proper, Ladakh, Baltistan, and Gilgit, as well as of Punch and Jammu.

Mr. Whistler will be glad if members will give him any observations they may have made during their visits to Kashmir, however limited they may be. Single records of time and place of a single species, if accurate, are often of considerable value when collated with other records. Nor need members feel that records are chiefly required from the most out-of-the-way localities. It is noticeable that there is least information available about such parts as the southern slopes of the Pir Panjal, the areas round the Jhelum valley motor-road, Bhadarwar and Kishtwar, while the plains of Jammu are ornithologically practically unknown. A very valuable ornithological trip could be made into the Himalaya from Jammu either by the Banihal pass or better still, up the Chenab. Even a week-end spent at Jammu town verifying the commonest birds (the House-crow, the Kite, the Babbler, etc.) would be of value. Mr. Whistler is particularly anxious for information as to where in this neighbourhood the plains avifauna merges into the Himalayan. Observations on distribution, both local and altitudinal, dates of

arrival and departure of migratory birds, dates tending to show altitudinal movement, observations on habits and behaviour and breeding, and of abnormalities—any point of interest will be welcomed. Mr. Whistler will also be most grateful for shooting notes and records of game, wild-fowl, etc., descriptions of good days' sport and of methods found satisfactory for shooting small game; accounts of native methods of trapping and snaring; and legends and folk-lore pertaining to birds. Communications should be sent to Hugh Whistler, Esq., Caldbec House, Battle, Sussex, England. Mr. Whistler will be most happy to reply to any enquiries and will carefully acknowledge his indebtedness to those willing to assist him in the manner indicated.

MOORCROFT.—One of the outstanding personalities of Himalayan exploration in the beginning of last century was Moorcroft, the superintendent of the Honourable East India Company's stud at Delhi. He travelled extensively in Kashmir, Ladakh and Tibet. In many ways he was a remarkable man, far ahead of his time, and as yet full justice has not been done to him. In a recent letter, Sir Aurel Stein wrote: "He was unfortunate in dying at Balkh, before he could write up his abundant materials, and afterwards in having his travel notes locked up in the office-table of a 'Political,' limited in his outlook, for close on 20 years. The man is worthy of real respect and ought to find a fit biographer. Indirectly we owe to him most of our early knowledge of Tibetan literature and Northern Buddhism."

The Editor will be glad to receive any original documents or little-known contemporary notes or notices dealing with Moorcroft, and to know of any member who would care to undertake his biography.

WINTER SPORTS OUTFIT.—Skis are now made in Srinagar by the Kashmir General Agency, from Kashmir ash, which though not so good as hickory, seems to be harder and tougher than Swiss ash. Toe irons and bindings are made up by Amira the gunsmith of Srinagar, but they are not yet so satisfactory as those obtainable from Switzerland. Waterproof boots cannot be purchased in Kashmir, either for climbing or winter-sports. The Army ammunition boot affords a substitute, though an unsatisfactory one, and this important item should invariably be obtained from Europe if time permits.

REVIEWS.

SPORT AND TRAVEL IN THE HIGHLANDS OF TIBET.—By SIR HENRY HAYDEN AND CESAR COSSON. *London: R. Cobden-Sanderson, 1927. 9×6 inches; xvi + 262 pages; illustrations and a map. 21s.*

THIS BOOK describes a journey from Sikkim across Tibet through Lhasa into the practically unknown region of the Great Lakes, and a shorter visit to the equally unknown area of Thak Po, south-east of Lhasa. The purpose of the expedition was scientific, and Sir Henry Hayden intended to publish the results of his geological investigations in the area visited in the Records or Memoirs of the Geological Survey of India. Most unfortunately, the two travellers were killed in Switzerland before it was possible to write up this valuable scientific work. Some fossils which were brought back and have been described by Dr. Cowper Reed of Cambridge in the Records of the Geological Survey of India, and an old note-book in which the writing has, on many of the leaves, been obliterated by the storms which seem to have been a daily experience during the journey, are the only scientific legacies of a remarkable feat. An attempt is being made to piece together these notes to form some sort of connected account of the geological conditions of an area never before described.

Hayden had a horror of anything which might, in any way, give the impression of self-advertisement, and the present book would never have been written but for two things. In the first place, he hoped to make a little money for his Guide, Cosson, for whom also he was endeavouring to obtain the Italian title of "Cavaliere", and secondly, he could not deny the necessity put before him by his friends that his journeys should be at least recorded. The chaff he experienced regarding his literary splash in the public eye was limited by the fear that any further leg-pulling might result in the cancellation of the book! One can imagine the concern he would have evinced at finding the excellent portrait of himself which so rightly adorns the first page!

It is almost ironical that a book written by a man so modest and self-effacing should bring its writer so constantly before the reader at every page. The principal charm of the book is in fact its author's personality. Tibet, its country and people, are described in a simple attractive style, but it is not so much Tibet that we see, but Hayden pushing on in double marches with that Irish impetuosity of his which

led him along at a reckless speed and sometimes got him into trouble. The excellent photographs do more than the text to bring before us that wild inaccessible country of mystery, but through it all we see Hayden and Cosson struggling through blinding blizzards, stumbling down boulder-strewn stream-beds, their mules laden with vast stores of copper money, starving on cocoa and biscuits, attending Gargantuan feasts of stewed pork, fowls' livers, meat dumplings, and stewed fruit washed down by sticky draughts of *crème de menthe*, dodging savage Tibetan watch-dogs, making presents of Homburg hats, Epsom salts and tins of jam, or Cosson shooting three gazelle with one bullet. Whatever it was they did, they did it with a courtesy and friendliness which explain the unique fact of Hayden's invitation to Tibet. The humour of it must have been overpowering at times and yet one feels that not even the vision of the Dzongpön of Shen-tsa in an English lady's untrimmed straw hat shook the stolidity of their good manners. It is probably correct to say that no other European has ever been actually invited and welcomed to this inaccessible country.

Hayden was quick to appreciate character and singles out in his book one who, in the midst of a superstitious and somewhat timid folk, showed a forceful and progressive mind. The Tsarong Shapé, of whom two photographs appear in the book, visited Calcutta a few years back with Colonel (then Major) F. M. Bailey, and brought some promising samples of mica into the Geological Survey offices for opinion. Incidentally he was ushered into the writer's room and introduced by an Indian clerk ignorant of the use of acute accents as "The Wrong Shape"! Hayden's remarks regarding him and "the ultimate fate that overtakes most high officials of oriental courts" were prophetic, for only a short while ago he ended his life under the executioner's knife in the same way as his predecessor—the former husband of one of his wives.

It was always a matter of great satisfaction to Hayden that he left things easy for any traveller going after him. This idea took a very strong hold on him early in his service, and to follow in his footsteps invariably meant a ready welcome, generous hospitality and loyal assistance. It was not his first visit to Tibet for he had accompanied the Frontier Commission in 1903-04, and the country seems to have put a spell upon him which he never lost.

Those who knew Hayden would readily expect that any account by him of his travels would fall far short of the actual achievement. The book is one for travellers, pioneers and wanderers in unknown places, who can read between the lines and fill in the gaps. It is not

a learned discourse, but a book for the fire-side. There is no fulsome magniloquence and a cursory reader might miss the glamour and the thrill of what will truly be an outstanding exploit among the journeys of the 20th century; the book may allow him occasionally to forget that he is in Tibet and not climbing an Alpine col to a good dinner in a comfortable hotel. Those who have worked at altitudes of 15,000 feet and over will know what the crossing of the Goring La at 19,000 feet in a 22-mile march meant. The note-book remarks: "very bad road up to glacier over granite boulders all the way"; they did the 22 miles in 8 hours. The Weather in Tibet—the least one can do is to spell it with a capital "W"—seems to be its most prominent feature. Judging from the continuous succession of storms encountered the country must be the lightning-conductor as well as the roof of the world. The strain of the daily weather *straf* was the principal cause of the hollow cheeks, hollow eyes and loose waist-bands, which both travellers showed for days after their return to Calcutta. The most interesting section of the book is naturally that dealing with the house-less region of the Great Lakes and its nomad population.

Cosson was a simple mountain Guide and one has already said much in saying that. But there was an innate nobility about him which raised him higher even than his high calling and made him a fit companion for Hayden; it carried him almost unconsciously through the ordeal of wearing dinner clothes for the first time in his life, which he did in Calcutta. Much he must have absorbed from Hayden who combined the fine manners of an Irishman with that big-mindedness and loyal sympathy which made friendship with Hayden a bond between his friends. *Nobilitas sola est atque unica virtus.*

EDWIN PASCOE.

THE RIDDLE OF THE TSANGPO GORGES.—BY CAPTAIN F. KINGDON WARD. *London: Edward Arnold & Co. 1926.*
9×5½ inches. xv+328 pages. 21s.

As Sir Francis Younghusband aptly remarks in his introduction to this book, Captain Kingdon Ward is happy in his vocation, and happier still in his choice of the field in which to fulfil it. We would add that on the present occasion the author was also happy in the date (1924) which he selected for the journey so delightfully described in the volume under review. Captain Kingdon Ward's departure for the Tsangpo Gorges synchronized with that of the third (and last) expedition to Mount Everest; these have, in fact, been the last two

expeditions to cross the Indo-Tibetan frontier with the goodwill and approval of the Tibetan Government. Since the year 1924, the Dalai Lama and his advisers have reverted to the national policy of rigid seclusion which has been traditional with them since the days of Warren Hastings, and the immediate prospects of any further European adventure in the Forbidden Land are far from rosy.

In addition to the lure of geographical discovery, Captain Kingdon Ward's object was to collect plants in a region which he justly describes as an even greater mystery from the botanist's point of view than from the geographer's. His interests have long centred on the 200-mile fourfold gap in the mountain-barriers of south-eastern Tibet—between the Yunnan plateau on the east and the easternmost sentinel of the Himalayan Range, Namcha Barwa, on the west—where the ramparts are breached by the big four rivers of Southern Asia, the Yangtze, Mekong, Salween and Tsangpo. On previous occasions, approaching this gap via the Yunnan plateau, he had succeeded in penetrating the gorges of the three first-named rivers. The Tsangpo gorge, however, remained remote and impenetrable whether from the east or by direct approach from the south; only by crossing the Sikkim Himalaya and travelling eastwards across the plateau of south-eastern Tibet was it possible to reach the western edge of the great gap, at the point where the Tsangpo bursts round the broken end of the Assam Himalaya.

The story of this expedition, which occupied nearly a year—from March 1924 to February 1925—is written in the light and pleasant style which one expects from Captain Kingdon Ward. Botanical interests predominate, but the volume is full of descriptive matter of geographical and general appeal. Earl Cawdor, who accompanied the author throughout, contributes two final chapters on the ethnography and social conditions of the area visited, as well as a number of the excellent photographs which illustrate the volume. New geographical work is summarized in a map on the scale of 1/1,000,000 based on planetable and compass traverses by the authors. The spelling of names is not always consistent on the map and in the text, and a few more of the place-names mentioned in the text might well have been included in the compiled portion of the map. There are also several instances in which the heights of passes, etc., mentioned in the text differ by 200 feet from the values given (in metres) on the map.

Travelling via Gyangtse, Tsetung and Tsela, the party established their headquarters at the little hamlet of Tumbatse in the Rong

valley, at the far south-west corner of the Kongbo Province. From this centre two botanical excursions were made, in June and October, across the Tsangpo to the Doshong La, a pass on the main Himalayan Range which had been previously visited from the south by Captains Trenchard and Pemberton at the time of the Abor Survey in 1913. Another journey of great geographical interest was made, during August and September, to the previously unknown portion of the Tsangpo-Salween divide north of latitude 30° ; after effecting a junction with General Pereira's route on the *Gyalam* or Lhasa-China Road, the return to Tumbatse was accomplished via the Gyamda river, whose course had never previously been mapped. The most thrilling chapters in the book are those in which the author relates his successful exploration of the gorges at the great bend of the Tsangpo. Colonel F. M. Bailey and the present reviewer had tackled these gorges both from downstream and from upstream in the summer of 1913, but owing to a combination of diplomatic and climatic difficulties a stretch of river some 40 miles in length then had perforce to remain unvisited. Unhampered by diplomatic restrictions, and choosing a time of year when the great river was at its lowest and the rope-bridges passable, Captain Kingdon Ward and his companion have now most ably and successfully completed the task—thereby finally and completely dispelling any last remaining grounds for belief in the existence of the mysterious "Falls of the Brahmaputra."

One regrets that the inset map of the Tsangpo Bend should have been drawn on so small a scale as to preclude the insertion of all the place-names referred to in the text; this, it is to be feared, may somewhat mar the clarity of author's otherwise most attractive narrative, except for the few who are familiar with this very unfrequented corner of Asia.

One interesting problem still awaits solution: what becomes of the Great Himalayan Range after its eastern culmination in the peak of Namcha Barwa (25,445 ft.)? Between Pemaköchung and Gompo Ne, the Tsangpo river traverses one of the most terrific gorges on the face of the earth, implying undoubtedly that it here cuts through a great mountain-axis. Does the Great Himalayan Range itself turn suddenly northwards through Gyala Peri and Makandro, or on the other hand does it maintain its easterly direction with diminishing elevation through the satellite peak of Sanglung (23,018 ft.) subsequently perhaps resuming its existence in the unexplored regions of Poyül? The topographical evidence is, as Captain Kingdon Ward remarks, incomplete; the problem is one which demands geological

as well as further geographical investigation. Let us hope that the opportunity may not be too long delayed!

H. T. MORSHEAD.

NEPAL.—BY PERCEVAL LANDON. *London: Constable, 1928. Two Vols.* $10\frac{1}{4} \times 7\frac{1}{2}$ inches. *Vol. I.,* xxiii+358 pages. *Vol. II.,* vii+363 pages. *Illustrations and Maps.* 63s.

It is probably no exaggeration to state that of all Eastern countries Nepal is easily the least known. That this is so is all the more remarkable when one realizes that it is by no means inaccessible, for its frontiers on east, west, and south are bounded by provinces of British India. A policy of strict seclusion, however, has closed the country to foreigners, and beyond those favoured few—as Mr. Landon points out, fewer in number even than those who have visited Lhasa—who have been permitted, from time to time, to visit the capital at Katmandu, practically no European has been allowed to travel in the country since Dr. Hooker visited Eastern Nepal in 1848.

Apart from the attraction which is inevitably associated with a forbidden land, the antiquarian remains in Nepal are such as to constitute the country one of the most important fields for historical research on the whole continent of India. Greatly as the policy of seclusion is to be regretted from many points of view, it must not be forgotten that this very policy is, indirectly, responsible for the present fine state of preservation in which we find many of the wonderful old buildings and historic remains. His Highness the Maharaja fully realizes the importance of these treasures, and it is gratifying to note that he has agreed that such further excavations and examinations as may be necessary shall be carried out with the assistance of the highest antiquarian authorities in India.

The first volume of the work under review opens with a sketch of early Buddhism, and Mr. Landon gives us a detailed account of the sacred remains at Rummindei, and the visit of Asoka to Nepal. Succeeding chapters deal with the early history of the country, which, to anyone not well acquainted with early Indian history, are exceedingly difficult to follow. The author cannot be blamed for this, however, for the only available record, the *Vamshavali*, or chronicle of the country, contains so much apocryphal matter that it is almost impossible to distinguish between fact and fiction.

With the rise to power of Maharaja Jang Bahadur, Mr. Landon is on surer ground, and he gives us an interesting and accurate picture

of Nepalese history from 1845 onwards. His chapters dealing with this and subsequent periods do not, perhaps, add greatly to our knowledge of the facts ; but it should be remembered that with the exception of Professor Sylvain Levi—whose monumental treatise on the antiquities of the country will always remain the chief authority for scholars—nearly, if not quite, all previous writers on Nepal have been servants of the Government of India, and as such their work has often been subject to heavy censorship. In this respect Oldfield may be instanced. Although employed as Residency surgeon during the time of Jang Bahadur, he omits all reference to that Prime Minister's visit to England, and is also silent on the subject of the Anglo-Nepalese Campaign of 1814-16. As Mr. Landon notes, "he seems to enter a protest by a line of asterisks."

The author had at his disposal all the available records dealing with past events in Nepal, and, being under no obligation to submit his work to the censor, we get for the first time a complete and unbiased account of the political history of Nepal and her rise as an independent sovereign state. It is for this reason that Mr. Landon's work is especially valuable.

The first volume is brought to a close with a detailed and scholarly account of the many historical places and antiquarian remains in the Valley of Nepal—that curious elevated plain, surrounded by hills, which was once a lake—in which the capital, Katmandu, is situated.

The opening chapters of Vol. II are devoted to a brief description of the towns and routes in outer Nepal, which, taking into consideration the fact that they had of necessity to be compiled from the oral accounts of native travellers, give a good general, if not intimate, account of the country outside the main valley.

The remainder of the second volume deals with the state of the country since the rise to power of the present Maharaja, Sir Chandra Sham Sher, undoubtedly one of the greatest administrators and reformers the East has known.

These last four chapters are the best in the book, and we are given an intimate and accurate account of the history of Nepal from 1901 to the present day. Sir Chandra Sham Sher occupies the centre of the stage, and occupies it rightly, for surely no one man has done more for his country than has this able statesman. When Sir Chandra first assumed office in 1901 his country had barely emerged from a state of mediævalism ; but we now find such modern benefits as electric light, piped water-supplies, hospitals, and modern schools and colleges, and, most remarkable reform of all, the abolition of slavery. The

list might be extended indefinitely, and it is no exaggeration to state that all these improvements are due to the determination and ability of this one man. It should be added that all this has been brought about without intervention, or even help, from the outside world, an additional tribute to the Maharaja's skill as an administrator.

But in spite of all that Sir Chandra has done for his country, it is in connexion with the help he rendered to the Empire during the dark days of the Great War that his name will be remembered best. Mr. Landon gives us the bare facts; and he is wise thus to confine himself, for it would indeed be difficult adequately to praise this unique war effort.

A few words must now be added in criticism.

Mr. Landon commences his book with a long preface and some preliminary notes on early Buddhism. These are followed by chapters on history, the continuity of which is somewhat broken by chapters of purely geographical description. The book gives one the impression of having been written as a series of independent essays, and would have been improved by more careful arrangement. A brief geographical description of the country and its situation might with advantage have been inserted in Chapter I. As it is, a reader not well acquainted with the geography of India might well be in some doubt as to the exact position of the country until he had read some considerable part of the book.

The author has adopted a curious system of his own for the transliteration of vernacular words and place-names. The present writer had considerable difficulty in recognizing some of the words and places referred to in the text, and in a scholarly work of this description some recognized system of transliteration, such as that advocated by the Royal Asiatic Society, or the Royal Geographical Society, should have been adopted.

The general reader will perhaps be somewhat disappointed that, in this history of a country whose fame, to the outside world at all events, rests largely on the fact that it is the home of the Gurkhas, but eight pages of Appendix XVII are devoted to a description of the people. This is the weakest part of the book, for Mr. Landon's details are inaccurate and based on out-of-date material. It is particularly to be regretted that he refers to the Chetri tribe as the Khas, and to the *lingua franca* of the country as Khaskura, rather than as Nepali. The present Maharaja has made strenuous efforts to eliminate this use of the word Khas, with its implied significance of degradation, which, as the recent researches of Professor R. L. Turner

have proved, was probably an invention on the part of the Brahmans and is without foundation.

In a book so lavishly provided with appendices, a full and accurate bibliography should have been added. Mr. Landon mentions but few of the better known works dealing with the country.

The book is provided with four beautifully reproduced maps. In that of Eastern Nepal, however, the writer has detected several errors in the north-east corner of the map, a part of the country with which he happens to be familiar. This leads one to suppose that the remaining maps may not be free from errors, but it is only just to add that they more than fulfil the requirements of the general reader.

In his closing pages Mr. Landon writes : " It has been my hope that a hitherto almost unknown territory and almost unrecorded history should be illustrated ; that a gallant race which has long assumed kinship of blood-brotherhood with ourselves on a score of fields of war should become better understood and better appreciated wherever the English language is spoken ; and that our debt to the master-mind of Nepal should be paid before an already lengthy term of service and responsibility yields, as all things must yield, to the march of time."

In this he has been entirely successful, and it is melancholy to think that he did not live to see his work in its final form. I would wish it to be understood that what I have written in criticism is in no way meant to detract from this really admirable and scholarly account of a very gallant kingdom. This book, which is Mr. Landon's most important contribution to the literature of the East, will now take its place as the standard authority on the history of Nepal, for it replaces everything that has previously been written on the subject. It remains only to add that the book is beautifully produced and, even in these days of almost universally good photographs, magnificently illustrated.

C. J. MORRIS.

EXPLORATION OF THE SHAKSGAM VALLEY AND AGHIL RANGES.—BY MAJOR KENNETH MASON. (*Records of the Survey of India, Vol. XXII.*) Dehra Dun : Geodetic Branch Press, 1928. 10×7 inches. xii+182 pages. *Illustrations and Map.* Rs. 3 or 5s. 3d.

THE Himalayan Club starts with the advantage of having in this publication a kind of guide book to perhaps the most interesting and least explored part of the whole Himalaya.

Major Kenneth Mason for years had the ambition of exploring that most remote and wonderful region lying north of the glittering constellation of peaks which culminate in K². In 1926 he was at last able to fulfil that ambition. And now in commendably compendious form he presents us with the results of his labours; and all future Himalayan travellers will owe him a debt of gratitude, for they will be able to carry with them a map presenting with accuracy the main features of the region leaving to them only the details to fill in, and a book recording Major Mason's personal experiences and showing precisely what has now been done and what remains to be accomplished.

And let it be said at once that what remains to be done is without limit. How could we ever know enough of those glorious mountains—exceeded in height only by Mount Everest! Do we yet know enough even of the Alps, though thousands visit them every year! Who will be the first to stand on those ridges on the north side of the Shaksgam river just facing K² and the Gasherbrum Peaks and tell us what it feels like to look down into the Shaksgam trough and then up to those mighty peaks towering immediately over it? Who will have the daring to paint that picture? Who will be the first to ascend the Gasherbrum glacier and get right in under the Gasherbrum Peaks? And who will be the first to ascend the glacier at the foot of the Savoia Pass on the *west* of K² and see that monarch in his stateliest grandeur?

For painters, photographers, descriptive writers—for artists of every kind—Mason has prepared the way. And for such the Shaksgam is a veritable paradise—bleak and stern perhaps, but a paradise for all that; and one which invigorates and purifies and ennobles and leaves no room for the fatty degeneration of the heart.

And may I add that for this region a big expedition is not a necessity. It is a positive disadvantage. The first white man to enter it had no other white man with him. He had only a scratch lot of Baltis and Ladakhis got together at Yarkand. He used no tent. Moreover, he was only twenty-four, and had not passed the Higher Standard in Hindustani—and has not yet! Unto a young subaltern all things are possible—especially now that he can have Major Mason's book in his pocket and the advice and guidance of the Himalayan Club, and I hope some decent boots, an ice-axe and a good rope.

FRANCIS YOUNGHUSBAND.

QUER DURCH AFGHANISTAN NACH INDIEN.—By EMIL TRINKLER. *Kurt Vowinkel*, 1925; $8 \times 5\frac{1}{2}$ inches; 234 pages; map and illustrations.

AN English translation, under the title of *Through the Heart of Afghanistan* by B. K. Featherstone (*Faber and Gwyer, London*, 1928), is also available, which excludes a few photographs not taken by the author, as well as two coloured plates, which appear in the German edition.

Recent events in Afghanistan have created a world-wide interest in that country. Modern literature dealing with it is somewhat scanty, chiefly owing to the fact that, until recently, the country has been difficult of access to Europeans. The author made this journey in 1923-24 in the capacity of geologist to a newly-founded Afghan trading company and in his book he narrates his adventurous journey across Afghanistan in a matter-of-fact manner, and gives a faithful account of his impressions of the people and the country without exaggeration. The book is well illustrated and should prove a welcome addition to the bibliography of the subject. The scientific results of his journeys have been published separately *. The book opens with the author's start from Riga via Moscow, Tashkent, Samarkand, Merv to Kushk, from which point, owing to loss of a wallet containing his passport en route, he had to return to Tashkent no less than twice, which resulted in a delay of seven weeks before he could proceed.

He eventually got away from Kushk and crossed the lofty Ardewan pass to Herat. Herat is depicted as a dream city of the past with many ruined palaces and mosques. After a halt at Herat to prepare for his onward march, he proceeded by the unfrequented Hari Rud, the Kotal-i-Ahengaran, the Scharak Kushta and Unai passes to Kabul. He succeeded in traversing the passes just before progress was barred by the winter snow. Kabul, in contrast with Herat, is described as a city of mud houses with few buildings in European style, but with a cosmopolitan bazar. It possesses a few wide streets and many gloomy, dark, narrow and dirty lanes. In 1924 Dr. Trinkler met several of his countrymen in Kabul, who were working as doctors, architects and engineers employed on the construction work of the new town and a palace of Darulaman, as well as some Italians. When

* Afghanistan; Eine Landeskundliche Studie. By Emil Trinkler (*Ergänzungsheft Nr. 196 Zu Petermann's Mitteilungen*) Gotha: Justus Perthes 1928. An excellent, comprehensive and well-arranged geographical description of the country.—Ed.

he was in Kabul the author was requested by the King to prospect for coal and iron in the western portion of the Hindu Kush. He accordingly had exceptional opportunities for seeing the country. Both in his letterpress and illustrations he conveys a vivid impression of the broken, desolate and mountainous nature of the country. On returning to Kabul, he went through several days' excitement, as tribal rioting was in progress. There was also a certain amount of Russian intrigue. Leaving Kabul he proceeded by car through Jalalabad, Dakka and the Khyber to Peshawar, where he was much impressed by the peace and good order, as well as the comparative cleanliness in the conditions of life in India, as contrasted with those prevailing in Afghanistan. The book concludes with a rather prosaic record of a flying visit to some of the famous cities of India, Peshawar, Delhi, Jaipur, Agra, Benares, Calcutta, and an account of his journey back home via Ceylon, Aden, the Suez Canal, Messina and Marseilles.

C. M. THOMPSON.

WETTERLEUCHTEN IM OSTEN.—BY WILHELM FILCHNER.

Berlin-Schoeneberg: Peter J. Oestergaard Verlag 1928. 8×5½ inches; 300 pages; 4 maps, 2 plans, 6 sketches and 10 photographs.

THIS is a revised edition of Dr. Filchner's *Sturm über Asien* of 1924, and is a work of both geographical and historical interest. It deals in a small compass with the trend of events in Central Asia between 1899 and 1923, more especially with reference to Mongolia and Tibet, which the author describes as the "witches' cauldron of the east." The book takes the form of novel in which the efforts of Russia to undermine British influence in the East, and the parts played by China, Japan and other neighbouring countries in the Central Asian problem, are set forth in a series of episodes out of the life of Zerempil, a Buriat subject of Russia.

The characters in the plot are in many cases obviously fictitious, but on the other hand actual characters such as Dorjiev, Col. Orlov, the Dalai Lama, Pandits Nain Singh and A.K., the Amir Amanullah, General Macdonald, Sir Francis Younghusband, Col. Kozlov, Baron Ungern Sternberg, General Pereira, Trotzky, Cols. Koltschak and Denikin are introduced, all of whom played important rôles in the extraordinary tangle of events affecting the destiny of Central Asia during the period of the story.

Zerempil was born in 1870 in Urga and, entering the Buddhist monastery there, came in contact with Aguan Dorji (Dorjiev), under

whose influence he was educated and trained as a secret service agent in St. Petersburg. He then took part in various expeditions and intrigues on behalf of Russia, for which country and the country of his birth he showed an unbounded devotion throughout. The first of these expeditions took him to Peshawar. In the next he is depicted as carrying war material, etc., to Tibet, just before the despatch of the British expedition to Lhasa in 1903, which resulted in the flight of the Dalai Lama to Urga. The success of the British expedition to Lhasa and the defeat of the Russians by the Japanese in 1904 caused Russian prestige to decline in Tibet. The main theme of the book next centres round Kumbum, where Zerempil has established himself in the Buddhist "monastery of a Thousand Pictures." An account of his life in the monastery and of the religious observances of the priests is given. The story then turns to the Tibetan struggle for independence from China and the author describes the alternate gruesome massacres of Chinese by Tibetans and *vice versa*, one of the most vivid pictures of these being given in an account of the siege and fall of the monastery of Sing-pi-ling before the Chinese troops under General Tschao. We next have the Chinese taking possession of Lhasa and the flight of the Dalai Lama to India in 1910, the Chinese revolution and reinstatement of the Dalai Lama in 1913. The Great War, beginning in 1914, causes the Russian collapse, and leads up to the establishment of the Soviet Government in Russia. Zerempil then joins the White Army under Koltschak and after being taken prisoner by the Reds, is released on condition that he transfers his allegiance to the Soviet. He finally returns to his beloved Tibet where he finds British influence reigning. Finding the Soviet propaganda contrary to all his religious views, the disillusioned Russophile, Zerempil, finally retires to a quiet monastery in Mongolia, where he intends to devote himself to the service of religion to the end of his days.

C. M. THOMPSON.

MAGIC LADAKH.—BY MAJOR M. L. A. GOMPERTZ ("GANPAT")
London: Seeley, Service & Co. 1928. 9×5 inches; 292 pages; illustrations and sketch-map. 21s.

THE work of "Ganpat" needs no introduction to the readers of this Journal, and many of them will also be familiar with the land of which he writes in this volume. Major Gompertz, like so many of us, has been fascinated by "the High Snows in general and Ladakh in particular," and here he attempts, very successfully, to impart

something of the magic which that region of the earth exercises upon him to the less fortunate public who know nothing of it. He is over-modest in his claim ; it was his lot, he tells us, to pass over six months in 1928 wandering in Ladakh with a camera and a typewriter,—he did not shoot,—seeking to make pictures in words or by plate and film of all he saw ; and he would have us believe that the “ letterpress ” as he calls it, is but subsidiary to the pictures. That is, of course, merely a tribute to Nemesis ; in fact, the pictures are good, though not exceptional, while the verbal description is admirably adapted to its purpose. That is to say, the writer takes you along with him on the road to Leh and Hemis, over the Khardong to Nubra and the Saser, and then to the Pangkong Lake, chatting pleasantly the while on the country and its people, their history and their customs, and revealing the reactions of his own temperament to the changing scene. There is no overloading with detail, or parade of learning, no exaggeration of dangers or difficulties, no ecstatic fine “ writing up ” of beauties, grandeurs, and sublimities. It is all on the quiet conversational plane, yet adequate and accurate. Occasionally, indeed, he seems to miss an opportunity ; anyone who has seen the play at Hemis, for example, will feel that more might have been made of it by the writer. However, that is really an irrelevant grumble ; the plan of the book evidently precludes “ making more ” of any particular scene or incident. And for this we should be thankful ; there has been something too much of writing for effect among those who have crossed the Zoji La.

For the special purposes of this Club, the fourteenth chapter (Nubra and the Saser Pass) will be of most interest. It is tantalizing to read of Skyangpo-chhe which the author recommends to “ anyone who is interested in high mountains and glaciers, since they will have a fair three-to-one chance of being able to say that each new peak they set foot on is virgin snow or rock or ice. The Vissers worked the south side—the glaciers mostly ; Dr. Arthur Neve and Oliver went up the Mamosthong glacier and climbed the col at its head, and I have scrambled about some of the glaciers and the lesser peaks both north and south. Otherwise, the Shyok-Nubra divide is virgin ground and crammed with stately peaks of anything from 21,000 ft. upwards.”

That sounds attractive. Ganpat had the good fortune to reach this region with the Shaksgam expedition, which crossed the Khardong on 13th June 1926 ; his month of exploration about Skyangpo-chhe was September. It should be easy to plan a satisfying programme

and carry it out within the period of a reasonable leave. Our thanks for the tip to Ganpat !

S. G. D.

POPULAR HANDBOOK OF INDIAN BIRDS.—By HUGH WHISTLER, F.L.S., F.Z.S. *London : Gurney and Jackson. 1928. 9×6 inches ; xxiv+438 pages ; numerous figures and plates from drawings by H. Grönvold. 15s.*

THOSE who read Mr. Whistler's contribution to the present number of this Journal, will doubtless thirst for more information, dealing with the birds that live in other parts of India. Mr. Whistler's name alone is sufficient guarantee of the accuracy of his observations, and of the charm with which he sets them down. During his service in India he was well-known throughout the country as a highly skilled and scientific ornithologist, and the writer can clearly recollect his almost uncanny instinct which foretold the presence of a particular bird on a particular tree. Yet Mr. Whistler had no assignation with his bird-friends, and his expectation was the direct result of training.

In the first few lines of his Introduction, Mr. Whistler has defined the purpose of his book "to provide a popular and scientific, but not too technical account of the Common Birds of India." Underlying this purpose is the hope that the seed he sows may fall on fertile soil. The purpose has been admirably fulfilled, and many of us will feel a greater friendship for the birds about our gardens, now that we know their names.

Two hundred and fifty species of sixty families have been carefully described, fully and accurately. Special features which attract the eye or ear are given to assist identification in the field ; then follows the known distribution, and a description of the particular races that occur in India. If Mr. Whistler has concentrated unconsciously on the birds of the North in preference to those of the South, we must remember that India is a vast country ; and as Himalayans we may perhaps be grateful to him for his choice.

A most interesting feature of the book is the fascinating and often naive account of the habits, sociability and domesticity of each bird. Take for instance the cheeky little bulbul of Kashmir—"they keep on uttering their cheery call *Quick ! a drink with you,*^a sentiment that aptly fits the jovial roysterer that utters it."

Care has been taken to point out the differences in habit and distribution between the various races of a species. Nests, nesting places and eggs are all described with the same thoroughness.

The book is copiously and beautifully illustrated by Mr. Grönvold, a master of his art, the four coloured plates being particularly fine. For the inclusion of so many plates and sketches we have to acknowledge the generosity of Mr. F. Mitchell, Sir George Lowndes and Mr. W. S. Millard. Without their aid, it would have been impossible to place this valuable book in the hands of the public for which it is intended, at so modest a price.

K. M.

INDIAN BIRDS' NESTS.—BY DOUGLAS DEWAR. *Calcutta: Messrs. Thacker, Spink & Co., 1929. 7 × 5 inches. 189 pages. Rs. 5.*

MR. DEWAR'S writings as an ornithologist entitle him to consideration far above that of a mere compiler of handbooks. His present work is unpretentious; its purpose is to give within a small compass an epitome of our present knowledge of the nesting habits of the commonest species of the birds of the Indian plains.

The most obvious difficulty in a book of this scope is to discriminate between the species which are common enough to merit inclusion and those which are too rare to find a justifiable place. Mr. Dewar's choice in this respect appears admirable; it would be hard to suggest the names of species which have been unnecessarily included and very few of the common species appear to have been omitted. Perhaps the most noteworthy omission is the Black-winged Kite (*Elanus caeruleus*), an interesting bird which breeds freely in many localities throughout India.

In the case of most species Mr. Dewar indicates the nesting season, the usual situation and construction of the nest, details of number and colouration of eggs, and such facts as are known about the incubation and about the tending of the young. It would have been helpful if he could have given also the breeding range of the species; to scientists this is important, and it also serves to guide the less experienced in their efforts at identification. Every means which helps to obviate the necessity of shooting a bird in order to identify it is so much to the good.

In view of the importance attached by some classifiers to the distinction between nidifugous birds—or those which leave the nests as soon as they are hatched—and nidicolous birds—or those which are tended in the nest for some period—the addition of this information in the case of each species would have been of interest; perhaps space will be found for it in a subsequent edition.

The facts given by Mr. Dewar are characterized by his usual accuracy. One of the few statements which are open to exception is that the Sirkeer Cuckoo (*Taccocua leschenaulti*) is fairly abundant in Bengal: it may occur, but it certainly is extremely rare in most parts of that province. The different types of eggs of the Indian Wren Warbler (*Prinia inornata*) have not been very clearly distinguished. There are three distinct types, viz., (i) blue with red blotches and streaks, (ii) white with similar markings, and (iii) plain blue. This is hardly indicated by the description on page 53.

In certain species (e.g., *Turnicidæ*) Mr. Dewar has drawn attention to the fact that the male alone performs the duty of incubation; this is fringing upon a curious biological problem of sexual inversion and it would have been of value had Mr. Dewar indicated other factors of this problem such as the fights of the females of these species for the favour of the males, and, where the colouration of the two sexes (as in the Painted Snipe—*Rostratula capensis*) is distinct, the unusual tendency of the young females to resemble adult males. Perhaps the omission is deliberate, for we are here upon the borderline of theory. The book is essentially a book of facts, whose convenient form, accuracy and moderate price will commend it to all who are interested in the birds of India.

L. R. F.

WILD FLOWERS OF KASHMIR.—By B. O. COVENTRY. *London: Raithby, Lawrence & Co. Calcutta: Thacker, Spink & Co.* 1927. $7\frac{1}{2} \times 5$ inches. 2 Vols. Coloured Illustrations. Vol. I, Rs. 16. Vol. II, Rs. 12.

ONLY those who have wrestled with Hooker's Flora of British India and such-like complete and very technical works, can appreciate the splendid simplicity of Mr. Coventry's "Wild Flowers of Kashmir". Most flower-lovers who visit Kashmir are not botanists, but people who, overjoyed to find themselves in such a paradise of flowers, like at least to know their names, habits and uses. "Wild Flowers of Kashmir," without having the least flavour of the amateur, is yet understandable to all. Mr. Coventry has chosen a hundred of the more striking and attractive flowers of the country, and has so described and figured them that anyone finding them may identify them easily and with certainty. He wisely uses botanical terms, without which it is not possible to describe plants adequately; and in an introduction, which has a value of its own, he defines clearly and concisely the names of the different parts of a flowering plant, explains the

botanical terms used, and gives a brief account of the systematic classification of plants. For each plant there are two pages of description and one full-page coloured illustration. The description is full, clear and methodical. The plant's name is given with interesting notes on derivation; then follow its description, general and in botanical detail, its flowering season, locality, distribution and uses. The illustrations are reproduced from photographs in natural colour taken by the author, and are admirable for purposes of identification, being far more real than the ultra-fine specimens that most illustrators indulge in. If there is a case for adverse criticism, it is that the colours seem sometimes a trifle dull and cold. For instance, *Gentiana Kurroo* does not really take me back to the last time I saw its clear blue loveliness covering an arid slope, nor has *Androsace microphylla* its true warm rosiness. It is sincerely to be hoped that Mr. Coventry will finish his series, for the books are sure of a warm welcome.

R. A. Y.

TWENTY-FIVE YEARS BIG GAME HUNTING.—BY BRIGADIER-GENERAL R. PIGOT. *London: Chatto & Windus.* 1928. *Rs.* 18-6.

THIS is a charming book, charmingly illustrated; it will gladden the hearts of the many who, however humbly, try to follow in the author's footsteps in hills and jungle. For, quite apart from extended opportunities vouchsafed to few, Brigadier-General Pigot is obviously a hard man to follow.

There are opening chapters on transport, clothing and camp kit, on rifles and taxidermy. These are all packed with useful information—especially the first—which contains many hints on wind-proof clothing and the like, probably new even to many with considerable experience of shooting in cold climates. But it is to the chapters on Indian shooting that the average reader in this country will turn first. And here, in one respect at least, the author's experiences have coincided with the reviewer's; General Pigot holds a strong brief for those often much-maligned officials, the forest and district officers. If, having first found out where he wants to shoot and to whom to apply, the intending sportsman takes the trouble to conform to the rules of application and to write with ordinary civility, he will almost invariably receive not only courtesy and consideration in return but often also entirely gratuitous help and hospitality.

Shooting in the Terai and in Burma is dealt with fairly fully, but the Central Provinces are barely mentioned. And there is a

somewhat tantalizing account of shooting in the Sundarbans; one could wish that here the author had been more definite as to details of locality and bandobast. But quite possibly, such information, if given, would now be out of date. To judge by the account of an abortive trip in Siam, that would appear to be a country to avoid unless one is possessed of unlimited time and patience. Shooting in Kashmir and other parts of "the hills" is delightfully described. But it is to shooting in Mongolia, Siberia, the Tien Shan and Turkistan generally that the author devotes most space. And it is here that his heart obviously lies. It is satisfactory to read that he differs from other recent authorities in his opinion that the ibex, wapiti, roe, and sheep of the Tien Shan are safe from destruction for many years to come. But—and here he is in agreement with his predecessors—he entirely failed to find any big poli on the Chinese Pamir; though there is every reason to suppose that big heads are still plentiful on the Russian Pamirs and at certain seasons in Wakhan.

H. G. M.

CORRESPONDENCE.

THE SHYOK DAM.

To

The Editor,

The Himalayan Journal.

DEAR SIR,

Now that general attention has been directed to the Shyok Dam and the possibility of a flood this summer is recognized, it may be worth while to examine the records of the two previous great Indus floods, to see whether there was anything about them which puts them beyond the reach of competition on this occasion. The two historic floods in the Indus took place in June 1841 and August 1858. The first, which was the greater, overwhelmed a Sikh army that happened to be encamped on the banks of the river near Torbela. The second flooded Nowshera Cantonment, which of course had not come into existence in the earlier year.

Cunningham, who visited Ladakh in 1846 and 1847, gives a detailed account (*Ladak* pp. 103-109) of the damage done by the

flood of 1841 from the junction of the Nubra river down to Skardu, and himself saw many traces of its passage. His account in my opinion suffices to establish the fact that a very large flood had occurred in the Shyok and Indus valleys a few years before his visit and there seems no reason to doubt that he ascertained its date correctly. He obviously had access to State records in which the date is given as the middle of *Jeth* in the *Sambat* year 1898, *i.e.* 1st June 1841. But there is also no doubt whatever that at the same time the Indus was suffering from an obstruction elsewhere. There had been a landslip at the Lechar Pari, some miles below the outfall of the Astor, west of Nanga Parbat. This formed a dam which completely blocked the Indus and caused its waters to back up as far as Gilgit. The evidence collected by Major Becher, as quoted by Drew (*Jummoo and Kashmir Territories*, pp. 415-421) is conclusive as to this and as to the date.

Can it be that there were two obstructions, and that the flood of the first higher up, of which the traces were observed by Cunningham, touched off the Lechar block, and that the resultant flood at Attock was the work of both? If so, a catastrophe of the same magnitude can hardly be expected to recur.

I had intended to make a study of this question and perhaps write an article on it, but have been prevented by ill-health. I am now off on leave and must, therefore, be content merely to broach the theory and leave it to be tested by others more competent.

I am, Sir,

Yours faithfully,

SIALKOT,

E. B. HOWELL,

17th March, 1929.

(Resident in Kashmir).

Note by Editor.

See Footnote 2 on page 17. I can find no *direct evidence* of a flood in the upper Shyok in 1841; though floods occurred in 1835, 1839, and probably 1842. The period was one of advance of the Kumdan glacier, and it is quite possible that after the flood of 1839 the glacier advanced *at once* and blocked the valley. This *may* have burst in 1841, and then re-formed to burst again the following year. But there is no other record of the Shyok Dam bursting in successive years, and such an event is not likely.

If Cunningham had obtained his date (1st June 1841) at Skardu or in the Shyok valley, this would be fair evidence of a flood caused by the bursting of a dam in the Shyok. But unless the State records contain evidence definitely from that region, it seems to me more likely that Cunningham mistook the effects of the three known Shyok floods of 1835, 1839 and 1842 for those of the great

Indus catastrophe of 1841. There is no doubt that Falconer who knew of the origin of the 1835 flood, *assumed* the same origin for the 1841 flood, during that year, and deliberately set aside the evidence of its true origin. It is my belief that his arguments carried conviction mainly through the geographical ignorance of the times, and that Abbott, Cunningham, and Henderson all accepted his view without producing any evidence in support of it. Becher and Montgomerie, however, went deeper and questioned inhabitants: they undoubtedly proved the existence of the Nanga Parbat obstruction, and since they could find no evidence of any other obstruction, it seems legitimate to assume that none existed.

The Chief of Astor, Jabbar Khan, who warned Kashmir in April, 1841, that the dam would probably hold for another month, would not have known of the existence of a block in the Shyok. He could only estimate when the waters of the lake would reach the crest of the dam, from the rate at which the lake was filling up. The dam burst approximately when he said it would burst. It does not, therefore, seem to have been "touched off" prematurely by a flood from another source.

K. M.

CLUB PROCEEDINGS.

THE ANNUAL General Meeting of THE HIMALAYAN CLUB was held at Army Headquarters, Delhi, on the 25th February, 1929, at 9-30 A.M. The President, Field-Marshal Sir William Birdwood, *Bart.*, took the chair.

The Honorary Secretary read his report on the work of the Club in the past year, which is printed below. The Club Accounts for 1928 were considered and confirmed. The Officers, Members of the Committee, and additional Members of the Balloting Committee were elected for the year from the 1st April, 1929, and Mr. John Reid, Manager of the Chartered Bank, Amritsar, was appointed Auditor.

REPORT ON THE WORK OF THE CLUB IN THE YEAR 1928.

BY THE HONORARY SECRETARY.

I WILL make this report as short as possible, but I should like to establish the practice of informing members at the annual General Meeting of the activities of the Club during the past year. Our membership is so widely scattered that it will be difficult otherwise for everyone to know what is happening, and what the management is doing to carry out the objects of the Club.

Rules of the Club and Registration.—At the inaugural Meeting last year the Committee of the Club was authorized to frame the Memorandum and Articles of Association (Rules) in accordance

with the decisions of the Meeting, and to register the Club under the Indian Companies Act as a Company limited by guarantee of Rs. 50 for each member. We are indebted to Mr. T. E. T. Upton, one of the founders of the Club, for drafting our Memorandum and Articles and putting through the formalities of registration ; and we are fortunate that there was one so competent as the Solicitor to the Government of India to do this for us. I know personally how much trouble Mr. Upton took, and how well the Rules that he drafted have been found to work in the practical administration of the Club's affairs. We also have to thank the Government of the Punjab for allowing us to register the Club without the addition of the word " Limited " to our name. The Club was actually registered on the 19th October, 1928.

Amalgamation with the Mountain Club.—A matter of great importance to the future of the Club, which was also discussed at the inaugural Meeting, was our relations with the Mountain Club of India. It was then decided that the Mountain Club should be asked whether they would be willing to amalgamate, and I was authorized to approach the Mountain Club accordingly. I am glad to be able to tell you that an extraordinary General Meeting of the Mountain Club, held in Calcutta on the 14th December last, agreed that amalgamation was desirable "for the benefit of the common aims of the two Clubs ;" and amalgamation has finally been arranged on the following terms :—

- (1) There should be one Club called "The Himalayan Club."
- (2) All members of the Mountain Club should be elected *en bloc* as ordinary members of the Himalayan Club.
- (3) Members of the Mountain Club not favouring amalgamation and not wishing to join the Himalayan Club should be refunded all their subscriptions.
- (4) Life-members of the Mountain Club should become life-members of the Himalayan Club on payment of Rs. 88, the difference between the life-subscriptions of the two Clubs ; or should become ordinary members on repayment of the difference between the life and annual subscriptions.
- (5) The annual subscription to the Himalayan Club should be paid by members of the Mountain Club from the 1st January, 1929.
- (6) The Committee of the Himalayan Club should propose at this General Meeting the election of Honorary Local Secretaries for Calcutta and Darjeeling under Rules 32, 34 and 35 of the Rules of the Club.

(7) The Committee of the Club should appoint a Sub-Committee for Calcutta under Rule 41 (12) of the Rules of the Club for the purpose of furthering the objects of the Club in the provinces of Bengal and Assam and in the Himalaya east of Nepal, and to exercise such powers as might be delegated to it from time to time by the Committee of the Club.

(8) In pursuance of these objects, and with due regard to the financial position of the Club and all claims and requirements, and to the distribution of membership, an annual grant should be made to be expended by the Calcutta Sub-Committee, subject to budget control by the Club in General Meeting, and to audit by the Auditors of the Club, under Rule 44 of the Rules of the Club.

(9) The Calcutta Sub-Committee should be required to submit to the Honorary Treasurer of the Club on the 1st January in each year :—

(a) A statement of its accounts for the past year, for incorporation in the accounts of the Club to be presented at the annual General Meeting in the following February, under Rule 44 of the Rules of the Club; and

(b) An estimate of its requirements for the following year.

(10) Any existing funds of the Mountain Club should be retained as a local fund for use at the discretion of the Calcutta Sub-Committee.

All members of the Mountain Club have now been elected by the Balloting Committee to be ordinary members of the Himalayan Club. The Committee of the Club will to-day propose that Mr. Alexander Marr, Vice-President of the Mountain Club, should be elected Vice-President of the Himalayan Club; that Mr. G. B. Gourlay, the Honorary Secretary of the Mountain Club, should be elected Honorary Local Secretary in Calcutta; and that Lieutenant-Colonel H. W. Tobin, a member of the Mountain Club Committee, should be elected Honorary Local Secretary in Darjeeling. The Committee will also propose that three other members of the Mountain Club Committee, Mr. J. S. Hannah, Mr. H. Newman and Mr. C. R. Cooke, should be elected members of the Balloting Committee. Some of us, including our President, Brigadier Wilson, Major Mason, Mr. Rutledge and myself, are also members of the Mountain Club. Thus it may be expected that after to-day's election, seven members of the Committee and five additional members of the Balloting Committee will have been members of the Mountain Club. From to-day on the two Clubs will be a single organization, strong and united to carry out our common objects.

Number of Members.—I know you will cordially welcome the 49 new members whom amalgamation has brought to us. Our membership has now reached 250. There were 127 founder members, and 74 ordinary members, apart from the members of the Mountain Club, have been elected. A steady stream of proposals continues. The last ballot was only a week ago, and already there are 14 more candidates to be elected. And as the value of the Club is recognized—when it is found how easy it really is to go to the Himalaya—I am confident that the number of our members will continually increase.

Information and Intelligence.—Our first year has properly been devoted to organization. A memorandum on “Information and Intelligence” has been sent to all members, and I need not weary you now with the details of our scheme. I feel, however, that the Club in General Meeting would like to thank those who have so freely agreed to place their great knowledge and experience at the disposal of members, as Local Secretaries, Local Correspondents, Scientific and Technical Correspondents and Assistant Editors. The Club is now organized to assist members travelling in the Himalaya not only with information about the details of their journey, but also with expert advice and information on almost any scientific or technical subject relating to the Himalaya in which they are likely to be interested. We are specially grateful to Major Kenneth Mason, our Honorary Editor, and I know he would like me to say how much he appreciates the contributions of those who have sent him notes and diaries of their journeys. Major Mason is the clearing-house of the Club’s information, and the success of our organization depends not only on him, but also on the willingness of members to furnish him with first-hand accounts of their doings in the Himalaya, which may seem unimportant to themselves but, accumulated, are the only sure basis of the route books and district guides that we hope to produce. He wishes, in particular, that members who are undertaking any considerable journey, will let him know well in advance, so that he can tell them what fresh information is wanted in that district, what old information requires check. A new edition of “Routes in the Western Himalaya, Volume I,” will be published in April, and it is satisfactory that 54 out of the 100 routes in it have been checked on the ground since 1922.

Library.—Our arrangements for information and intelligence will be incomplete without an adequate library. The funds of the Club are limited and the purchase of books can only be gradual.

Meanwhile, through the kindness of Army Headquarters, the United Service Institution and the Survey of India, books relating to the objects of the Club may be loaned to members from their large and valuable libraries. Catalogues of the books available are now being sent to members. At the same time it is hoped that members will help us to build up a library of our own, and supplement the narrow resources of the Club by donations. Many of our members have themselves written about the Himalaya, and we have to thank some of them for presentation copies of their works. Other members have sent typescript diaries or descriptions of routes and climbs, illustrated by photographs, which are of great value not only to other travellers but also as material for our route books and guides. We are especially grateful to the Alpine Club, which has generously sent us a set of the back numbers of *The Alpine Journal* that are still in stock. Lieutenant-Colonel R. H. Phillimore has now been appointed Librarian, and we may be sure that our library will steadily grow under his careful guidance.

Photographs.—Photographs are an important adjunct to intelligence, and we hope to accumulate in the Club library a representative collection of Himalayan photographs, arranged in district albums. To encourage this, an experimental exhibition was held in September in conjunction with the Simla Fine Arts Exhibition. The exhibition, which was arranged at very short notice by Colonel W. B. Spalding, was necessarily small; but the fine photographs sent by Mr. C. P. Skrine, Mr. N. A. Tombazi and others were greatly admired, and it is hoped that a larger exhibition will be held during the coming year. Several of the exhibitors generously presented their exhibits to the Club to form the nucleus of our collection. But we do not only want photographs for exhibition purposes. Photographs which may not be works of art, may still be most valuable to illustrate routes and to form a pictorial record of the country and its life. Members travelling in the Himalaya are asked to take photographs, especially photographs of topographical interest, and to send copies to the Librarian for the Club collection.

Equipment.—There is no matter on which travellers in the Himalaya require information more than on equipment. It has been decided to appoint a Sub-Committee to examine the question, and to prepare a note on the equipment and stores suitable for various types of Himalayan expeditions. Brigadier R. C. Wilson has kindly consented to act as Chairman of the Sub-Committee, and we are fortunate to be able to call on his wide experience and sound judgment.

"The Himalayan Journal".—Last and most important is *The Himalayan Journal*. The Committee has authorized Major Mason to produce the first number of the Journal, and it is hoped that it will be published by the end of April. It will be welcomed, I am sure, not only as a record of the activities of the Club and its members, but for its great interest and scientific value.

Expeditions in 1928.—Although the management of the Club has been concentrated on organization, the year has been an important one for Himalayan exploration, in which our members have played their part.

In Kashmir the ornithological expedition organized by Admiral Lynes, with two of our members, Mr. Hugh Whistler and Mr. B. B. Osmaston, has made a large collection of birds in the Lolab and Sind valleys, Baltistan and Suru, and the Gilgit Agency. The collection totalled 1,150 specimens and about 450 birds' eggs. Mr. Whistler is now engaged in the detailed study of this collection in England.

At the eastern end of the Himalaya, another member, Mr. Kingdon Ward with Mr. H. M. Clutterbuck made a botanical exploration of the Mishmi Hills. A large number of new plants has been collected, and further interesting evidence of the eastern extension of the Himalayan axis has been obtained. We hope to publish detailed accounts of these two expeditions in the forthcoming Journal.

We were particularly glad to welcome another member of our Club, His Royal Highness the Duke of Spoleto, on his arrival in India for his preliminary expedition to the Karakoram. He successfully formed his depot of supplies at Askole, the nearest village to the great Baltoro glacier. On the way back Dr. Balestreri made the first ascent of the rocky peak, Cheri Chor, immediately west of the Skoro La. This year the main Italian expedition will be occupied in the Karakoram, while the Duke himself will endeavour to cross the Central Asian watershed at the head of the Baltoro glacier to the mid-Shaksgam valley.

Another member, Lieutenant-Colonel Reginald Schomberg, who left India for Kashgar in the autumn of 1927, is still travelling and exploring in the Tien Shan. He has not yet been able to give us an account of his doings.

Kashgar has been a centre of considerable activity, and it is unfortunate that the Chinese authorities do not at present look favourably on scientific exploration. We have, however, received brief descriptions of two interesting tours made by members, one by Mr. F. Williamson, the Consul-General, and the other by Lieutenant

G. Sheriff, the Vice-Consul. The former traversed entirely unexplored country, the area of the eastern outer hills of the Pamir massif, between Kichik Karaul in the Kin-Kol valley and Kaying Aghzi in the Karataash, where he reached the route described previously by Mr. C. P. Skrine. Unfortunately Mr. Williamson had to curtail his visit to the "Alps of Qungur" owing to the murder of the Chinese Governor at Kashgar.

Lieutenant Sheriff has sent us some interesting notes of a journey he accomplished from Kashgar to the Tekkes valley, about four marches from Kulja.

Nearer home, though still a month's journey from the rail-heads of northern India, another member, Mr. F. Ludlow, crossed the Depsang plains to examine the lake in the upper Shyok caused by the advance of the Kumdan glacier. He has enabled us to keep in close touch with the situation there, and the possible danger of a flood.

Of the minor expeditions made by members, of which there have been many, mostly for the purposes of sport, I may mention that of Captain and Mrs. Lethbridge, through Spiti and Rupshu to the Tibetan border.

Two important expeditions, which have been carried out in Central Asia by German explorers, were completed during the year. The first was the journey of Dr. Emil Trinkler, the geologist, through eastern Ladakh and over the barren Aksai-chin plateau to Chinese Turkistan, where he studied the orography of the Mazar-tagh and the origin of the Takla-makan desert, with most interesting results.

The second was the expedition of Dr. Wilhelm Filchner, who entered Chinese Turkistan at Kulja. From here he passed through Urumchi and Hami, and crossed the Gobi desert to Anhsi. He spent the winter of 1926-27 on the Sino-Tibetan border near Koko Nor, where he encountered General Ma and Marshal Feng. In May 1927 he made for Lhasa, but was stopped 150 miles to the north, and was compelled to turn westwards to Ladakh, which he reached partly by a previously unexplored route about mid-February 1928. Dr. Filchner established a number of magnetic stations during his travels, and his final results, now being compiled in Berlin, will be awaited with interest.

Accommodation and Staff.—There are two other matters which I should like to bring to your notice—uninteresting perhaps, but of considerable importance in the daily administration of the

Club—namely, accommodation and secretarial staff. In these early days, when our income is small, it is especially necessary to reduce overhead charges to a minimum. And we have to thank the United Service Institution at Simla for so kindly housing us during the first months of our existence, and allowing us to share a clerk. The growth of the Club has now made it necessary to terminate this arrangement, and during the forthcoming summer, thanks to the Surveyor General we shall be accommodated in the office of the Survey of India at Simla. We can, however, only regard this as a temporary convenience, and I think you will agree that we should so direct our finances as to be able to provide for our own permanent Club room.

We have been able to effect a great economy in our secretarial charges by the appointment as Honorary Assistant Secretary of Mrs. Pattinson, well known to climbers as Miss Mabel Capper. The Club is greatly in her debt. Speaking for myself, I do not think that I could have carried on the duties of Secretary without her cheerful and efficient help. She knows our affairs, and there is no more sanguine optimist about our future.

We are hardly less indebted to my Personal Assistant, Mr. Ramchandra, who has done an enormous amount of work for us, and to Mr. Raja Ram of the Foreign Department who, during the absence of Mr. Young in England, carried on under Mr. Acheson's supervision the work of the Honorary Treasurer.

CLUB NOTICES.

Information and Intelligence—Equipment Sub-Committee—The Himalayan Journal, 1930—The Alpine Journal—The Italian Alps.

I. INFORMATION AND INTELLIGENCE.

A. Route Books and Guides.

ONE of the principal objects of the Club, as stated in the Memorandum of Association, is "to collect, classify and publish descriptions of Himalayan routes and other information relating to the Himalaya."

The basis on which it is proposed to work is "Routes in the Western Himalaya, Kashmir, etc." by Lieutenant-Colonel T. G.

Montgomerie, R.E., F.R.S., generally known as the Survey of India Route Book. A revised and enlarged edition covering Gilgit, Kashmir Punch, Ladakh and the routes to Central Asia from these districts, was prepared by Major Kenneth Mason and published by the Survey of India in 1922 as "Routes in the Western Himalaya, Kashmir, etc., Vol. I." A second edition of this volume has just been published (April 1929). Over 50 per cent. of the routes have been checked and corrected on the ground since 1922.

It now proposed :—

(1) To prepare a revised and enlarged edition of the remainder of Montgomerie's Route Book, covering Chamba, Lahul, Spiti, Kangra, Kulu, Bashahr, Tehri-Garhwal and Kumaun, which will be published as "Routes in the Western Himalaya, Kashmir, etc., Vol. II";

(2) To prepare a similar Route Book for the Eastern Himalaya and the northern ranges of Assam and Burma ;

(3) To prepare District Guides, elaborating these Route Books and including more detailed information on peaks and passes, on climate and meteorology, on geology, botany, natural history and other scientific subjects, on the inhabitants of the district and their way of living, archæology and folk-lore, and all matters of interest to Himalayan travellers.

The Honorary Editor will be in general charge of this work. Honorary Assistant Editors have been appointed to collect details of certain districts. Members who have first-hand knowledge of any district, marked "vacant" in the list given below, and are willing to undertake the Assistant Editorship, are invited to communicate with the Honorary Editor, 13, Wood Street, Calcutta.

The Honorary Editor will be very grateful if members would send either to him or to the Assistant Editor for the District any notes or diaries of their Himalayan travels, both past and future, that are likely to be of use for this work. Notes and diaries, when sent in original, will be copied and returned, if desired.

Any member proposing to travel in the Himalaya may apply to the Honorary Editor or the Assistant Editor for the District, who will furnish him with all available information about the routes by which he proposes to travel, and will also tell him what further information is required about existing routes, and what new routes in the district might usefully be explored. In this way, it is hoped, the available information about each district will continually be supplemented and extended.

Members finding any error that should be corrected or change that should be recorded in existing publications or maps, or in information with which they have been furnished, are requested to report it to the Honorary Editor or Assistant Editor for the District.

B. Local Secretaries and Correspondents.

The organization which was adopted at the inaugural meeting of the Club, is being developed as follows :

(a) Honorary Local Secretaries in Himalayan districts assist and advise members in all matters relating to travel in their districts, including transport, shikaries and porters, equipment and supplies, and costs. Detailed information about routes are furnished by the Honorary Editor or by the Assistant Editor for the District (*see above*).

(b) Local Correspondents in the principal centres in other parts of India advise members regarding Himalayan travel generally and other activities of the Club, and assist them in their preliminary arrangements. A Local Correspondent has also been appointed in London.

(c) Scientific and Technical Correspondents assist and advise members on scientific and other subjects, and collect and classify information on such subjects, which may be obtained from members or otherwise, for publication and other purposes.

C. Maps.

Survey of India Map Catalogues have been issued to Honorary Local Secretaries and Correspondents, who will inform members what maps are available for the districts that they are visiting, and assist and advise them in the purchase of their requirements. All maps published by the Survey of India may be obtained from the Officer-in-charge, Map Record and Issue Office, 13, Wood Street, Calcutta. Maps mounted on cloth or to fold should be ordered in advance of the date on which they are required.

D. Appointments.

The following members have already agreed to act as Local Secretaries or Correspondents :—

Local Secretaries.

Kashmir Dr. E. F. Neve, F.R.C.S. (Edin.), Mission Hospital, Srinagar, Kashmir.

Chamba ..	..	Lieut.-Col. J. C. Coldstream, Chamba State, via Dalhousie, Punjab.
Simla ..	..	A. K. Cargill, Esq., C/o P. W. Secretariat, Lahore and Simla.
Kumaun	..	Hugh Rutledge, Esq., I.C.S., Settlement Officer, Almora.
Darjeeling	,	Lieut.-Col. H. W. Tobin, D.S.O., O.B.E., "The Glen," Darjeeling.
Calcutta ..	..	G. B. Gourlay, Esq., M.C., 10, Clive Row, Calcutta.

Local Correspondents.

Lahore ..	..	H. M. Glover, Esq., Forest Office, Lahore.
London ..	..	Lieut.-Col. E. L. Strutt, C.B.E., D.S.O., 12, Somers Place, Hyde Park, London, W. 2.
Meerut ..	..	Lieut.-Col. G. K. Gregson, D.S.O., R.A., 28th Field Brigade, Meerut.
Peshawar	..	Lieut.-Col. H. L. Haughton, C.I.E., Comman- ding 10-11th Sikhs, Peshawar.
Quetta ..	..	Lieut.-Col. E. F. Norton, D.S.O., M.C., Staff College, Quetta.
Rawalpindi	..	Major C. G. Lewis, O.B.E., R.E., Survey of India, Rawalpindi and Murree.
Waziristan	..	Brigadier R. C. Wilson, D.S.O., M.C., Manzai Brigade, Manzai, S. Waziristan.

Scientific and Technical Correspondents.

Archæology	..	Sir Aurel Stein, K.C.I.E., Ph.D., D.Litt., D.Sc., Corpus Christi College, Oxford.
Botany ..	..	B. O. Coventry, Esq., Srinagar, Kashmir.
Entomology	..	Brigadier W. H. Evans, C.I.E., D.S.O., Head- quarters, Western Command, Quetta.
Fishing and Shooting		Lieut.-Col. H. G. Martin, D.S.O., O.B.E., Staff College, Quetta.
Folk-lore ..	..	H. W. Emerson, Esq., C.I.E., C.B.E., I.C.S., Chief Secretary, Punjab Government, Lahore and Simla.
Geodesy and Geophysics		Dr. J. de Graaff Hunter, D.Sc., M.A., Director, Geodetic Branch, Survey of India, Dehra Dun.

Geology and Glaciology	Sir Edwin Pascoe, <i>Kt.</i> , D.Sc., Director, Geological Survey of India, Calcutta and Simla.
Meteorology	.. Dr. C. W. B. Normand, D.Sc., Director- General of Observatories, Poona.
Ornithology	... H. Whistler, Esq., Caldbec House, Battle, Sussex, England.
Photography	.. Capt. C. J. Morris, 3rd Q. A. O. Gurkha Rifles, Lansdowne, U. P.
Survey and Maps	.. Major Kenneth Mason, M.C., R.E., Assistant Surveyor General, 13, Wood Street, Calcutta.
Zoology ..	.. Lieut.-Col. C. H. Stockley, D.S.O., O.B.E., 3/14th Punjab Regt., Fort Sandeman, Baluchistan.

Honorary Assistant Editors.

<i>The Pamirs and K'un Lun.</i>	C. P. Skrine, Esq., I.C.S., H. B. M's Consul- General for Sistan and Kain, Nazratabad (via Mirjawa), and Lieut. G. Sherrieff, R.A., Vice-Consul, Kashgar (via Gilgit).
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Gilgit Agency.

Hunza, Nagar, Gilgit, Yasin.	H. J. Todd, Esq., Political Agent, Gilgit.
Darel, Tangir, Astor, to the Babusar, Kamri, and Burzil passes.	J. Barron, Esq., R.A., Kashmir Artillery, Bunji, Gilgit Agency.
<i>Baltistan, Nubra, Ladakh and Zaskar.</i>	Major M. L. A. Gompertz, 3-10th Baluch Regiment, Razani, Waziristan.
<i>Kashmir Valleys, includ- ing the Kishanganga, the Lolab, the Sind and the Lidar.</i>	J. Kelly, Esq., Aitchison College, Lahore, and Major K. Hadow, M.C., Srinagar, Kashmir.
<i>Rawalpindi to Murree, the Murree Hills and the Galis.</i>	<i>Vacant</i>
<i>Abbottabad and Kagan.</i>	<i>Vacant.</i>
<i>Punch, Jammu, and Udhampur (Kisht- war).</i>	H. L. Wright, Esq., Chief Conservator of Forests, Jammu and Kashmir State, P. O. Jammu, N. W. Ry., and J. Kelly, Esq., Aitchison College, Lahore.

<i>Chamba</i>	..	..	Lieut.-Col. J. C. Coldstream, Chamba State via Dalhousie, Punjab.
<i>Kulu</i>	..	..	<i>Vacant.</i>
<i>Lahul and Spiti</i>	..	..	Capt. J. S. Lethbridge, R.E., 1st K. G. O. Sappers and Miners, Roorkee.
<i>Dharmasala Hills</i>	..	..	Capt. J. W. Rundall, 1-1st K. G. O. Gurkha Rifles, Attd. 3rd Assam Rifles, Kohima, Naga Hills, Assam.
<i>Bashahr</i>	..	..	{ Lower— <i>Vacant.</i> Upper—R. MacLagan Gorrie, Esq., P. O., Nichar, Simla District.
<i>Simla and Sirmur States</i>			<i>Vacant.</i>
<i>Mandi State</i>	..	..	H. L. Wright, Esq., Chief Conservator, Forests, Jammu and Kashmir State.
<i>Kumaun and Tehri Garhwal.</i>			H. Rutledge, Esq., I.C.S., Settlement Officer, Almora, U. P.
<i>Everest group</i>	..	..	Capt. J. G. Bruce, M.C., Staff College, Quetta.

NOTE.—Assistant Editors have not yet been appointed to the rest of the Eastern Himalaya.

II. EQUIPMENT SUB-COMMITTEE.

A Sub-Committee has been appointed to consider and report on Equipment. Members who have experience of Himalayan Travel are invited to send lists of Equipment which has been found useful to any one of the members. Suggested headings are :—

- (1) Clothing and footwear.
- (2) Bedding.
- (3) Camp equipment, tents and furniture.
- (4) Technical equipment—
 - (a) Mountaineering.
 - (b) Shooting, Fishing.
 - (c) Ski-ing.
 - (d) Photography.
- (5) Equipment for other pursuits.
- (6) Food.
- (7) Kitchen utensils and crockery.
- (8) Medical stores.
- (9) Instruments.

The Committee consists of :—

Brigadier R. C. Wilson, D.S.O., M.C. (Chairman), Brigade Headquarters, Manzai, Waziristan.

Capt. C. I. Curteis, R.A., 11th Light Battery (How.), Ambala.

Capt. C. J. Morris, 3rd Q. A. O. Gurkha Rifles, Lansdowne, U. P.

Lt.-Col. H. G. Martin, D.S.O., O.B.E., Staff College, Quetta.

Lieut.-Col. E. F. Norton, D.S.O., M.C., Staff College, Quetta.

III. "THE HIMALAYAN JOURNAL," 1930.

It is hoped to publish the second number of *The Himalayan Journal* in April 1930. Contributions should reach the Honorary Editor, 13, Wood Street, Calcutta, if possible not later than the 31st December, 1929.

It is hoped that all members travelling in the Himalaya or adjoining ranges in 1929 will send notes of their journeys. The Editor will be glad if members would type their papers and carefully check geographical names, and the names of species, etc., before submission.

IV. "THE ALPINE JOURNAL."

THE ALPINE CLUB has generously presented to THE HIMALAYAN CLUB a set of back numbers of *The Alpine Journal*, that are still in stock. Lieut.-Col. E. L. Strutt and Sir Geoffrey Corbett have made up some of the missing numbers. The Committee of THE HIMALAYAN CLUB will be glad to receive any of the following back numbers to complete the set. They should be sent to the *Hon. Librarian, The Himalayan Club, Simla*.

Nos. 1—28, 33—36, 43, 62, 65, 68, 69, 72, 73, 75—78, 83, 85, 89, 90, 95—97, 99, 101, 104, 107, 110, 116, 129, 130, 134, 136, 142, 143, 148, 159, 162, 170, 188, 190, 203, 219, 222, 223.

The dates of these are :—Up to Feb. 1870 ; May 1871 ; Aug. 1872 ; Feb. 1874 ; Nov. 1878 ; Aug. 1879 ; May, Aug. 1880 ; May, Aug. 1881 ; Feb., May, Aug., Nov. 1882 ; Feb., Aug. 1884 ; Aug., Nov. 1885 ; Feb., May, Aug. 1887 ; Feb., Aug. 1888 ; May 1889 ; Feb., Nov. 1890 ; May 1892 ; Aug., Nov. 1895 ; Nov. 1896 ; May 1897 ; Nov. 1898 ; Feb. 1899 ; May 1900 ; Feb., Nov. 1903 ; Nov. 1905 ; May, Nov. 1910 ; Feb. 1914 ; 1919 ; May, Nov. 1921.

V. THE ITALIAN ALPS.

THERE have been many complaints in recent years that travellers in the Alps are obstructed and molested by the Italian authorities

when crossing the Italian frontier by mule or glacier passes. Through the courtesy of the Royal Consul-General for Italy in India, the Honorary Secretary has been furnished by the Italian Government with a complete list of frontier passes by which passage is permitted to persons provided with the prescribed documents. The list is published on pages 3888-91 of the *Official Gazette* of Italy, No. 190, dated the 16th August, 1928. Further information can be obtained from the Honorary Secretary. Members of the Club visiting the Alps are advised to provide themselves with the prescribed documents and to refrain from crossing the Italian frontier by any pass which is not included in the list.

LIBRARY NOTICES.
BOOKS ADDED TO THE LIBRARY.
(1st February 1929.)

<i>Author.</i>	<i>Title.</i>	<i>Presented by</i>	<i>Classification.</i>
Abraham, G. D.	The Complete Mountaineer.	Col. H. Wood.	Sport.
Alpine Club	Journals (complete as available).	Alpine Club.	Do.
Do.	Do. additional vols.	Lt.-Col. E. L. Strutt and Sir G. L. Corbett.	Do.
Atkinson, T. W.	Travels in the Regions of the Upper and Lower Amoor.	Purchased.	Travels and Description.
Austin, H. H.	Some Rambles of a Sapper.	<i>Statesman.</i>	Do.
Beal	Life of Hiuen-Tsiang.	Major M. L. A. Gompertz	Biography.
Black, C. E. D.	A Memoir of the Indian Surveys, 1875—1890.	Surveyor General.	History.
Boeck	Indische Gletscherfahrten.	Purchased.	Travels and Description.
Do.	Indische Wunderwelt.	Do.	Do.
Bombay N. H. S.	Journals, 1914—1920 (odd numbers).	Sir G. L. Corbett.	Natural History.
Bonin	Les Royaumes des Neiges.	Purchased.	Travels and Description.
Buck, E. J.	Simla Past and Present.	Author.	History.
Burrard, Gerald	Big Game Hunting in the Himalayas and Tibet.	Sir G. L. Corbett.	Sport.
Burrard and Hayden	A Sketch of the Geography and Geology of the Himalaya Mountains and Tibet.	Surveyor General.	Geography and Travels.
Burrard, S. G.	A Note on the Different Methods by which hills can be represented on maps.	Do.	Survey & Topography.

BOOKS ADDED TO THE LIBRARY.—*contd.*

<i>Author.</i>	<i>Title.</i>	<i>Presented by</i>	<i>Classification.</i>
Burrard, S. G.	The Attraction of the Himalaya Mountains upon the Plumb-line in India.	Surveyor General.	Geodesy.
Do.	On the Origin of the Himalaya Mountains.	Do.	Do.
Candler, Edmund	The Unveiling of Lhasa.	Purchased.	Travels and Description.
Do.	On the Edge of the World.	Do.	Do.
Close, C. F. and Winterbotham, H. St. J. L.	Text Book of Topographical and Geographical Surveying.	Kenneth Mason.	Survey & Topography.
Conolly	Travels in the North of India.	A. E. B. Parsons.	Travels and Description.
Cowie, H. M.	A Criticism of Oldham's Memoir, "The Structure of the Himalayas."	Surveyor General.	Geodesy.
Cumming, C. F. G.	In the Himalayas and on the Indian Plains.	Purchased.	Travels and Description.
Darrah, H. Z.	Sport in the Highlands of Kashmir.	Do.	Sport.
David-Neel, A.	My Journey to Lhasa.	Do.	Travels and Description.
Dewar, Douglas	Game Birds.	<i>Statesman.</i>	Ornithology.
Do.	Indian Birds' Nests.	Messrs. Thacker, Spink & Co.	Do.
Doughty, Marion	Afoot through the Kashmir Valley.	Purchased.	Travels and Description.
Dracott, Alice E.	Simla Village Tales or Folk Tales from the Himalayas.	Do.	Folk-lore.
Duke, J.	Kashmir Handbook.	Sir Clement Hindley.	Guide-book.
Featherstone, B. K.	An Unexplored Pass.	Purchased.	Travels and Description.
Filchner, W.	Wetterleuchten im Osten.	Author.	Do.
Finn, Frank	Sterndale's Mammalia of India.	Messrs. Thacker, Spink & Co.	Zoology.

Forbes, M. C.	..	..	To Kulu and Back.	Sir Clement Hindley.	Guide-book.
Fox, Frank	..	..	Italy To-day.	Sig. Ugo Tommasi.	Travels and Description.
Grenard, F.	..	..	Tibet and the Tibetans.	Col. H. Wood.	Do.
Hamilton, Angus	..	..	In Abor Jungles.	Purchased.	Do.
Hervey, Mrs.	..	..	The Adventures of a Lady in Tartary, Tibet, China and Kashmir (3 vols.).	Do.	Do.
Hingston, R. W. G.	..	..	A Naturalist in Hindustan.	Do.	Do.
Holdich, Sir T. H.	..	..	Political Frontiers and Boundary Making.	Surveyor General.	Geography and Travels.
Do.	..	..	The Gates of India (2 copies).	Author.	Do.
Do.	..	..	The Indian Borderland (2 copies).	Do.	History.
Hunter, W. W.	..	..	Life of Brian Houghton Hodgson.	(Unknown.)	Biography.
Hunter, J. de Graaff	..	..	Formulæ for Atmospheric Refraction and the Application to Terrestrial Refraction and Geodesy.	Author.	Geodesy.
Do.	..	..	The Earth's Axes and Triangulation.	Do.	Do.
Hutchison	..	..	Guide to Dalhousie, Chamba and the Inner Mountains between Simla and Kashmir.	Sir Clement Hindley.	Guide-book.
Lawrence	..	..	The Valley of Kashmir.	Do.	Travels and Description.
Legendre, A. F.	..	..	Massif Sino-Thibetain.	Purchased.	Do.
Do.	..	..	Au Yunnan.	Do.	Do.
Lee, Fitzgerald	..	..	Guide to Dharmasala, Kangra Valley and Kulu.	Sir Clement Hindley.	Guide-book.
Longstaff, T. G.	..	..	Twenty Years After.	Author.	Travels and Description.
Markham, C. R.	..	..	A Memoir on the Indian Surveys, 1878.	Surveyor General.	History.
Mason, Kenneth	..	..	Routes in Western Himalayas, Kashmir, etc.	Author.	Guide-book.
Do.	..	..	The Thompson Stereo-plotter and Its Use.	Do.	Survey & Topography.
Do.	..	..	The Stereographic Survey of the Shaksagam.	Do.	Do.
Do.	..	..	Kishen Singh and the Indian Explorers.	Do.	History.

BOOKS ADDED TO THE LIBRARY.—*contd.*

<i>Author.</i>	<i>Title.</i>	<i>Presented by</i>	<i>Classification.</i>
Mason, Kenneth	A Hundred Years of Himalayan Exploration.	Author.	History.
Mason, Kenneth, and Stein, Sir Aurel.	Johnson's 'Suppressed Ascent' of E 61.	Kenneth Mason	Geography and Travels.
Mason and Hingston	Completion of the Link connecting the Triangulations of India and Russia.	Do.	Travels and Description.
Massieu	Nepal et Pays Himalayen.	Purchased.	Do.
Meyer-Illmersdorf	In Talern und Hohen des Himalaya.	Do.	Do.
Montgomerie, T. G.	Report on the Mussoorie and Landour, Kumaon, etc., Surveys, 1869-70.	Surveyor General.	Survey & Topography.
Morris, C. J.	Some Valleys and Glaciers in Hunza.	Author.	Travels and Description.
Do.	The Gorge of the Arun.	Do.	Do.
Naillen, A. vander	On the Heights of Himalaya.	Purchased.	Do.
Noble	Siberian Days.	Statesman.	Do.
Noel, J. B. L.	Through Tibet to Everest.	Purchased.	Do.
Northey, W. Brook, and Morris, C. J.	The Gurkhas.	C. J. Morris.	Do.
Odell, N. E.	Observations on the Rocks and Glaciers on Mount Everest.	Author.	Geology.
Pigot, R.	Twenty-five Years Big Game Hunting.	Statesman.	Sport.
Pollok and Thom	Wild Sports of Burma and Assam.	Col. H. Wood.	Do.
Rawling, C. O.	The Great Plateau.	Do.	Travels and Description.
Remmusat	Pilgrimage of Fa Hian.	Major A. E. B. Parsons.	History.
Robertson, C. L.	A Note on the Representation of Hills.	Surveyor General.	Topography.
Ronaldshay	On the Outskirts of Empire in Asia.	Purchased.	Travels and Description.

Ruttledge, H., Longstaff, T. G., and Wilson, R. C.	The Nanda Devi Group, etc.	Brigadier R. C. Wilson.	Travels and Description.
Schonberg, Von ..	Travels in India and Kashmir, 2 vols.	Purchased.	Do.
Ski Club of India ..	Annual of 1927-28.	Ski Club of India.	Sport.
Stein, Sir Aurel ..	Memoir on Maps of Chinese Turkistan and Kansu. (Appendices, K. Mason and J. de G. Hunter.)	Surveyor General.	Travels and Description.
Stuart Baker ..	Mishi the Man Eater.	<i>Statesman</i> .	Sport.
Survey of India ..	<i>Records of the Survey of India</i> , Vols. I to XXI. Most of these contain some matter of Himalayan interest, especially the following : Vol. IV. Explorations on the N. E. Frontier, 1911—1913. Vol. VI. The Indo-Russian Triangulation Connection, 1913. Vol. VIII (2 parts) Explorations in Tibet and Neighbouring Regions, 1865—1892. Vol. XX. The War Record, 1914—1920. Vol. XXI (part ii) Reconnaissance Survey in Bhutan and S. Tibet, 1922.	Surveyor General.	Survey & Topography.
Do. ..	Catalogue of Maps.	Surveyor General.	Catalogue.
Do. ..	Geodetic Report, Vol. I, 1922—25.	Do.	Geodesy.
Do. ..	The First Survey of Nepal and Skeleton Map of Nepal.	Do.	Survey & Topography.
Do. ..	<i>Triangulation in India and Adjacent Countries</i> :— Sheets 43-E (Sazin), 43-F (Abbottabad), 43-G (Rawalpindi), 43-H, Addendum to	Do.	Do.

<i>Author.</i>	<i>Title.</i>	<i>Presented by</i>	<i>Classification.</i>
	<p>43-H, 43-I (Gilgit), 43-J (Srinagar), 43-K (Punch), 43-L (Jammu), 43-M (Skardu), 43-N (Dras), 43-O (Anantnag), 43-P (Gurdaspur), 52-A (K2), 52-B (Kargil), 52-C (Umasi La), 52-D (Chamba) 52-E (Teram Kangri), 52-F (Leh), 52-G (More), 52-H (Baralacha La), 52-I and J (Kushku Maidan and Lower Chang-Chenmo), 52-K (Pangong Tso), 52-L (Tso Moriri), 52-M (Aksai Chin), 52-N (Lanak La), 52-O (Rudok), 52-P (Tashigong).</p> <p>These pamphlets contain the latitudes, longitudes and heights of points and stations fixed by triangulation by the Survey of India. Brief introductions contain a description of the area, history of its exploration, climate, best season for travel, bibliography and other matters of Himalayan interest.</p>		
Survey of India	Report on the Trans-Himalayan Explorations, 1875—1878.	Surveyor General.	Travels and Description.
Do.	Trans-Himalayan Explorations during 1870, Dehra Dun, 1871.	Do.	Do.
Do.	Do. 1878, Calcutta, 1880.	Do.	Do.
Tandy, E. A.	The Simla Estates Boundary Survey (Scale 50 ft. to 1 in.).	Do.	Survey and Topography.

Tombazi, N.	An account of a Photographic Expedition to the Southern Glaciers of Kangchenjunga in Sikkim Himalaya.	Author.	Travels and Description.
Trotter, H.	Account of Survey Operations in Eastern Turkestan in connection with Mission to Yarkand and Kashgar, 1873-74.	Surveyor General.	Geography and Travels.
Visser-Hooft, Jenny ..	Among the Kara-Korum Glaciers.	Author.	Do.
Ward, A. E.	The Sportsman's Guide to Kashmir and Ladak.	Sir Clement Hindley.	Sport.
Whistler, Hugh	Popular Handbook of Indian Birds.	Author.	Ornithology.
Wilson, R. C.	Kailas Parbat and Two Passes of the Kumaon Himalaya.	Do.	Travels and Description.
Wood, Capt. H.	Report on the Identification and Nomenclature of the Himalayan Peaks as seen from Katmandu, Nepal.	Do.	Geography and Travels.
Wood, Major H.	Explorations in the Eastern Karakoram.	Do.	Travels and Description.
Workman, Fanny Bullock and Workman, William Hunter.	Two Summers in the Ice Wilds of Eastern Karakoram.	M. L. A. Gompertz.	Do.
Do.	Ice-bound Heights of the Mustagh.	Do.	Do.
Younghusband and Molyneux ..	Kashmir.	Purchased.	Do.
<i>The following typescripts have also been presented.</i>			
Parsons, A. E. B.	Leh to Kashgar.	Author.	Do.
Rundall, H.	Week-end Rambles and Scrambles in the Kangra Himalaya.	Do.	Do.
Shewen, D. G. P.	A Trip to the Baspa Valley.	Do.	Do.
Spalding, W. B.	A Trip to the Chaur.	Do.	Do.
Official Report.	Report of the Enquiry into the Death of Major H. D. Minchinton.	Adjutant General.	History.

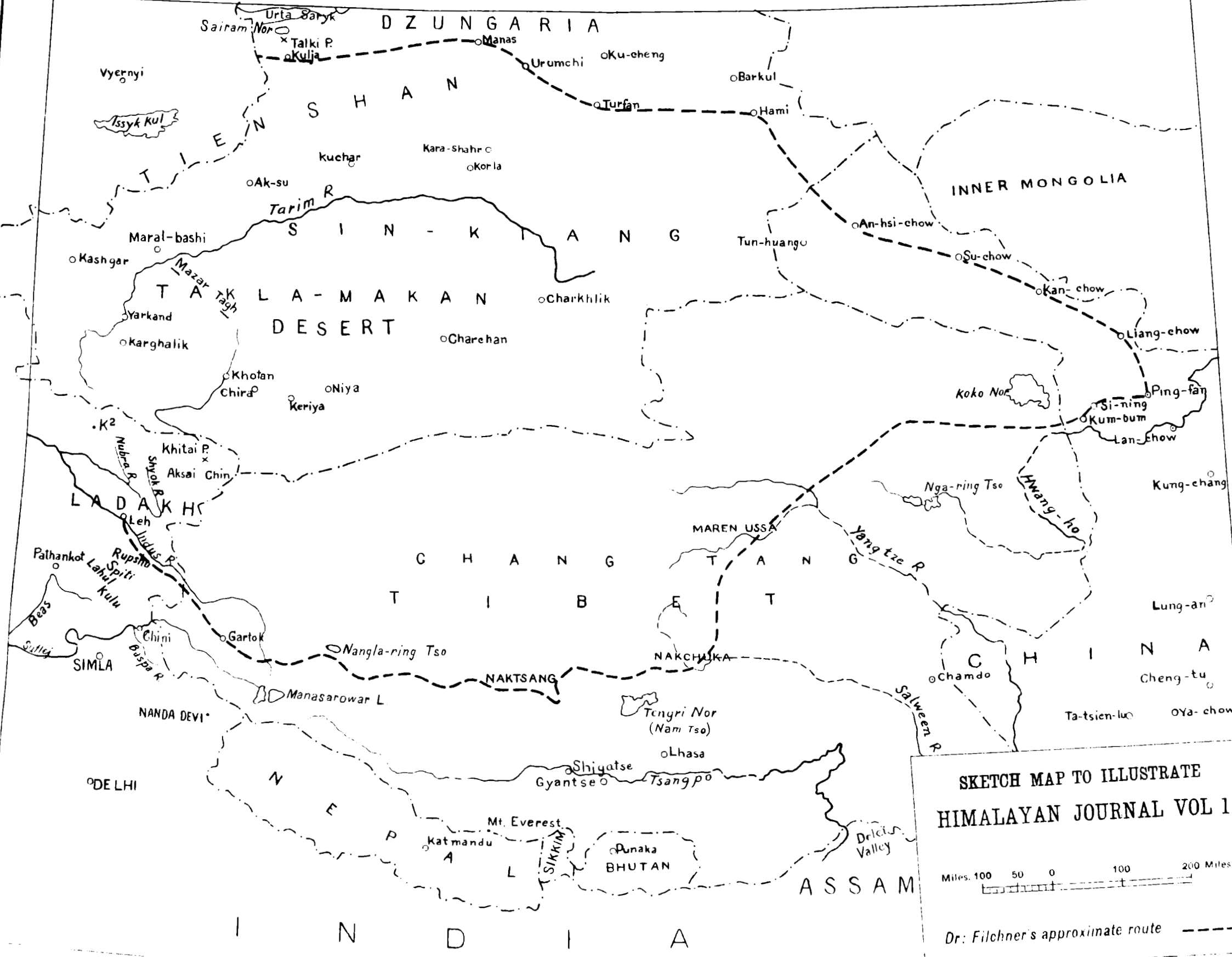
The Books contained in the above list are available by application to the Librarian, The Himalayan Club, C/o The Director, Frontier Circle, Survey of India, Simla, and should be returned to him when done with.

The following books are available by application to the Hon. Local Secretary, The Himalayan Club, 10, Clive Row, Calcutta, and should be returned to him :—

Author.	Book.
ABRAHAM, G. D. ..	.. The Complete Mountaineer.
BENSON, C. E. ..	.. Mountaineering Ventures.
CARR, H. R., and LISTER, G. A.	The Mountains of Snowdonia.
COLLIE, J. N. ..	.. Climbing on the Himalaya.
CONWAY, W. M. ..	.. Climbing and Exploration in the Karakoram Himalayas.
MUMM, A. L. ..	.. Five Months in the Himalaya.
NERUDA, M. N. ..	.. The Climbs of Norman Neruda.
PYE, D. ..	.. George Leigh Mallory.
RUNDALL, J. W. ..	.. Weekend Rambles and Scrambles in the Kangra Himalaya.
VISSER-HOOFT, J. ..	.. Among the Karakoram Glaciers.
WORKMAN, F. B., and W. H. ..	.. Peaks and Glaciers of Nun Kun.
YOUNG, G. W. ..	.. Mountain Craft.
YOUNG, G. W. ..	.. On High Hills.
YOUNGHUSBAND, FRANCIS ..	.. The Epic of Mount Everest.

Lists of Books available in the Libraries of Army Headquarters, the United Service Institution, or the Survey of India have been circulated to members separately.

The Committee of the Club is making every effort to allot as much money as possible for the purchase of books, but it is hoped that purchases will be liberally supplemented by presentation copies. It is also hoped that all author members who have not already done so will present copies of their publications, and that those members who can spare books of Himalayan interest from their own libraries will remember that used copies are not less welcome than new.



SKETCH MAP TO ILLUSTRATE
HIMALAYAN JOURNAL VOL 1

Miles. 100 50 0 100 200 Miles.

Dr. Filchner's approximate route -----